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USDA FOREST SERVICE
GENERAL TECHNICAL REPORT INT-98
NOVEMBER 1981

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UTO GUIDE FOR
APPRaising DOWNED WOODY FUELS
IN MONTANA FORESTS:

Lodgepole Pine, and
Engelmann Spruce - Subalpine Fir
Cover Types

35

SL/SA

William C. Fischer



INTERMOUNTAIN FOREST AND RANGE EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
OGDEN, UTAH 84401

THE AUTHOR

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RESEARCH SUMMARY

Two series of color photographs show different levels of downed woody material resulting from natural processes in two forest cover types in Montana. Each photo is supplemented by inventory data describing the size, weight, volume, and condition of the debris pictured. A subjective evaluation of potential fire behavior under an average bad fire weather situation is given.

Instructions are provided for using the photos to describe fuels and to evaluate potential fire hazard.

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ACKNOWLEDGMENTS

The fire behavior potential ratings assigned to the photos in this guide are the result of on-site evaluation by the following fire managers and researchers:

Donald E. Abbott, Deerlodge National Forest
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Wyatt W. Frost, Bitterroot National Forest
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Don V. Williams, Northern Region Aviation and Fire Management (Retired)
Jerry Williams, Montana State Division of Forestry

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¹Subsequently assigned to Institute of Northern Forestry, Fairbanks, Alaska.

CONTENTS

	Page
PURPOSE OF PHOTO SERIES	1
USING THE PHOTOS	1
Arranging the Photos	1
The Data Sheet	2
Describing the Fuel Complex	2
Rating Fire Potential	3
PHOTO GUIDE DEVELOPMENT	5
PUBLICATIONS CITED	6
SERIES 1 - LODGEPOLE PINE SAF COVER TYPE 218	9
SERIES 2 - ENGELMANN SPRUCE - SUBALPINE FIR SAF COVER TYPE 206	43

PURPOSE OF PHOTO SERIES

This photo guide contains information that can be used to appraise the dead woody debris on the forest floor of lodgepole pine and Engelmann spruce - subalpine fir forest cover types (SAF 1954) in Montana. The guide is primarily for natural (nonslash) fuels, although some photos include old logging and thinning slash. Natural fuels result from wind, snow, and mechanical breakage, natural pruning of lower branches, needle fall, windthrow, blowdown, and the falling of trees killed by insects, disease, fire, and competition for light and moisture. The old logging and thinning slash shown has either been treated or left untreated. It can therefore be considered a part of the natural fuel complex.

This guide is designed to help forest managers describe the deadwood on the forest floor, to estimate the amount of such material, and to evaluate its fire hazard. The photos show a variety of fuel situations that exist in lodgepole pine and spruce-fir forests in Montana and surrounding Northern Rocky Mountain areas.

The fuel appraisal obtained from this guide can be used to plan fire management strategies including fire prevention, fuel treatment, prescribed fire, dispatch-

ing for fire suppression, and establishing criteria for unscheduled prescribed fires.

The photos provide a relatively quick and inexpensive aid for accomplishing fuel appraisal over large forested areas. Although the precision of this procedure is unknown, it is expected to be intermediate: less than standard fuel inventory but greater than designating a stylized fuel model such as used in the National Fire Danger Rating System.

Perhaps the strongest feature of this series is the fire potential rating with each photo. Alternative methods for evaluating fire potential are generally unavailable, and those methods that do exist are outdated or not well suited for rating nonuniform fuel situations.

USING THE PHOTOS

Arranging the Photos

The photos and accompanying data sheets are presented in two series:

Series 1—Lodgepole pine cover type.

Series 2—Engelmann spruce - subalpine fir cover type.

Within each series, the photos are arranged according to total fuel loading. The first photo in each series shows the lightest fuel load, the last shows the heaviest load.

The Data Sheet

The fuel complex shown in each photo is described on an accompanying data sheet in terms of the following characteristics:

1. Forest cover type.
2. Montana habitat type.
3. Stand and site data: age of overstory dominants, average slope, aspect, elevation, and fire ecology group.
4. Down and dead woody fuel loadings by size class.
5. Other fuel data: average duff depth and for fuels 3 inches (7.62 cm) in diameter and greater, the average diameter, the percent rotten, and the volume of sound material.
6. National Fire Danger Rating System fuel model.
7. Stylized fuel model.

letters of the generic name and the first two letters of the specific name of the plant species (such as PICO-*Pinus contorta*).

Describing the Fuel Complex

Several important fuel characteristics can be seen in each photo: (1) The amount of fuel in the different diameter classes, (2) the general condition of the fuel (sound versus rotten), (3) the distribution of the fuel over the area, and (4) the depth of the fuel (each black and white section on the plot marker is 1 foot [0.3048 m]). Consequently, the manager can use the photos to estimate values for these characteristics of woody debris on the forest floor.

To use the photos to describe downed woody fuels simply inspect the fuel complex and then select the photo that most nearly compares with what is on the ground. Then use the information on the data sheet to describe the observed fuel complex.

Perhaps no one photo adequately represents the actual situation. If this is the case, select two photos that bracket the observed fuel complex and then interpolate between the values on the data sheets accompanying the selected photos.

Symbols used for forest vegetation are the standard symbols for Northern Region plants (USDA Forest Service 1969). The symbols represent the first two

Rather than trying to select one photo or a pair of photos that best reflects the entire fuel complex, the user could describe each of the above-mentioned fuel characteristics separately. This could be done by using the following procedure suggested by Maxwell and Ward (1976a, 1976b), as adapted by Koski and Fischer (1979):

1. Observe each of the characteristics of the fuel complex on the ground.
2. For each characteristic, select the photo that most nearly matches, or photos that bracket the observed situations.
3. For each characteristic, obtain a value from the data sheet accompanying the selected photo (or interpolate a value if a pair of photos was selected).

The above procedure should only be used when a single photo or a pair of photos can't be used to describe the observed situation. For most fuel situations, any improvement in estimates obtained by rating each fuel characteristic separately is not justified by the increased time it takes to get them.

These procedures refer to use of the photos at a specific point. This can be a representative point and the results applied to an entire forest stand. This method is satisfactory when the fuels are uniform throughout the stand. It will be difficult to select a representative point in many stands. The photos can

be used to sample stands when nonuniform fuels preclude the selection of a representative point. The procedure is as follows:

1. Establish 10 or more points, spread systematically through the stand.
2. At each point evaluate the fuels within clear eyesight.
3. Summarize the results as a simple average for the stand or express the results as the percent of area in several classes (for example, 40 percent of stand >10 tons/acre, 60 percent of stand <30 tons/acre).

Rating Fire Potential

The data sheet for each photo contains adjective ratings for five different expressions of fire behavior: rate of spread, intensity, torching, crowning, and resistance to control. An overall fire behavior potential rating is also given for the fuel complex pictured. The ratings are for an "average bad" fire weather situation defined as: 80°-90° F temperature (27°-32° C), 15-20 percent relative humidity, 10-15 mi/h windspeed (16-24 km/h), and 4 weeks since a significant rain (0.10 inch [0.25 cm] or greater).

This approach to estimating fire potential is not without precedent in the Northern Rocky Mountains. In many ways it is a refinement of the time-tested

concept of fuel rating introduced more than 40 years ago by L. G. Hornby (1936).

The adjective ratings nil, low, medium, high, and extreme are defined as follows for each of the different expressions of fire behavior:

Rate of Spread

Nil—fire cannot sustain itself.

Low—spread will be slow and discontinuous.
Medium—uniform spread possible, but can be stopped by aggressive ground attack with hand tools.

High—spread will be rapid; indirect attack on fire front may be required for control.

Extreme—spread will be explosive; little chance of control until weather changes.

Torching

- Nil—no chance of torching.
- Low—occasional tree may torch-out.
- Medium—pole-sized understory trees likely to torch-out.
- High—most of understory and occasional overstory trees likely to torch-out.
- Extreme—entire stand likely to torch-out.

Crowning

- Nil—sustained spread in crowns will not occur.
- Low—sustained spread in crown unlikely.
- Medium—some crowning likely but will not be continuous.
- High—sustained crowning likely.
- Extreme—sustained crowning will occur.

Intensity

- Nil—fire cannot sustain itself.
- Low—cool fire; very little hot spotting required for control.
- Medium—fire will burn hot in places; aggressive hot spotting with hand tools likely to be successful.
- High—too hot for sustained direct attack with hand tools; aerial tankers or large ground tanker required to cool fire front.
- Extreme—direct ground attack not possible; air or ground tanker attack likely to be ineffective.

Resistance to Control

- Nil—no physical impediments to line building and holding.
- Low—occasional tough spots but not enough to cause serious line building and holding problems.
- Medium—handline construction will be difficult and slow, but dozers can operate without serious problems.
- High—slow work for dozers, very difficult for hand crews; hand line holding will be difficult.

Extreme—neither dozers nor hand crews can effectively build and hold line.

Overall

Nil—fire will not sustain itself.
Low—fire can be easily controlled by several smokechasers with hand tools.

Medium—aggressive crew-sized (6-10 persons) initial attack required for successful control.

High—aggressive crew-sized (25 persons) initial attack with substantial reinforcement required for successful control; 10 percent chance that initial control action will fail.

Extreme—90 percent chance that initial control action will fail.

Procedures for using the photos to estimate fire potential are the same as those given for describing the fuel complex.

PHOTO GUIDE DEVELOPMENT

This photo guide was developed using the technique explained by Fischer (1981), which involved the following steps:

1. The fuel complexes photographed were selected to represent the range of fuel situations observed to exist for the cover type in Montana.
2. Sample plots are generally laid out and photographed in accordance with procedures suggested by USDA Forest Service (1975).
3. Fuels were sampled and described using fuel inventory and computational techniques developed by Brown (1974).
4. Habitat types are according to Pfister and others (1977). Cover types are according to SAF (1954).
5. Fire potential ratings are based on subjective evaluation by experienced fire managers using the adjective ratings and definitions in the preceding section of this guide.
6. National Fire Danger Rating fuel model assignment was by the author using definitions provided by Deeming and others (1977). Stylized fuel model assignment was by the author using definitions provided by Albini (1976).
7. The fire ecology group assignment was by the author using the definitions provided by Davis and others (1980).
8. Stand and site data were obtained using standard forestry field techniques.

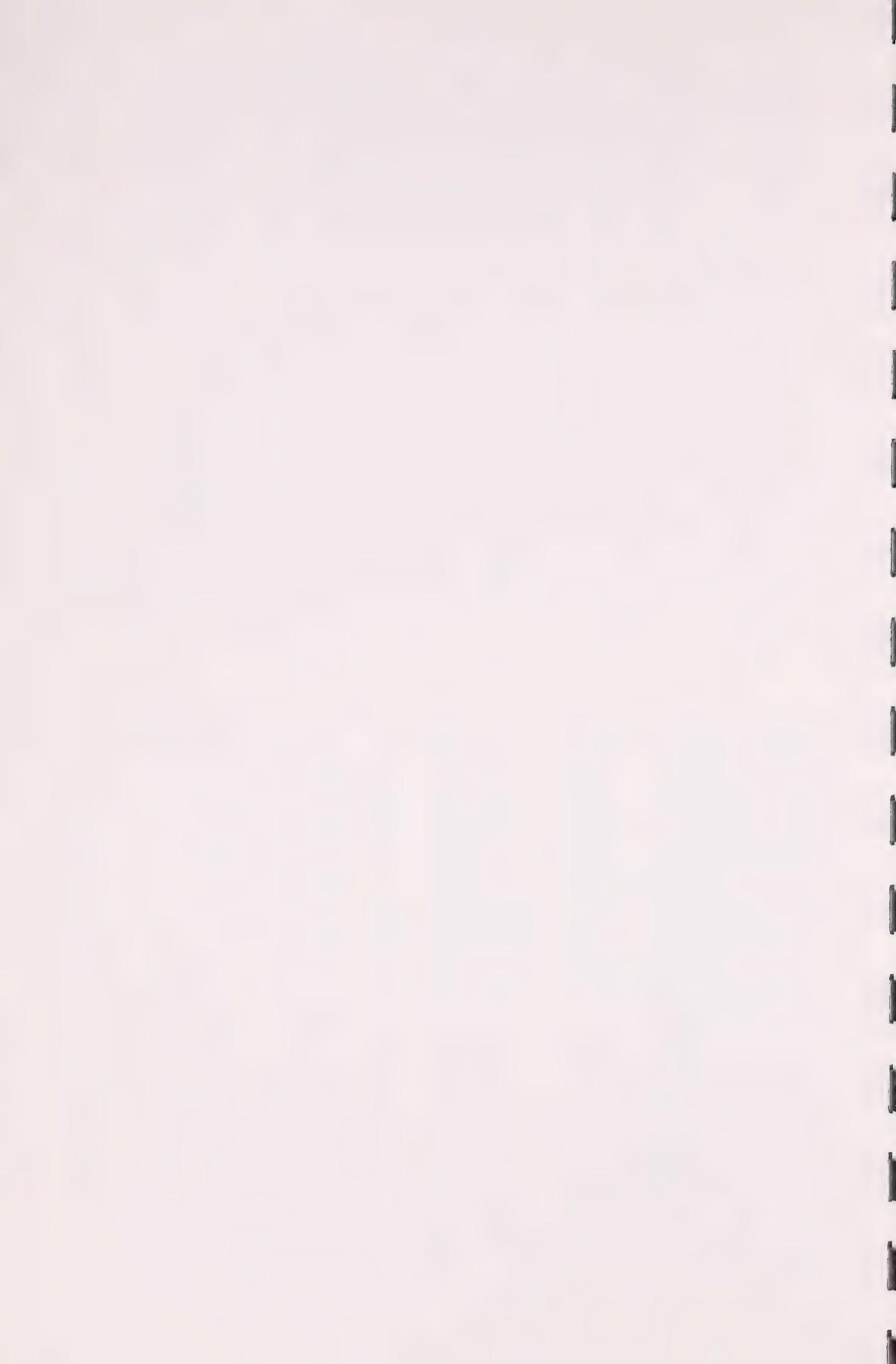
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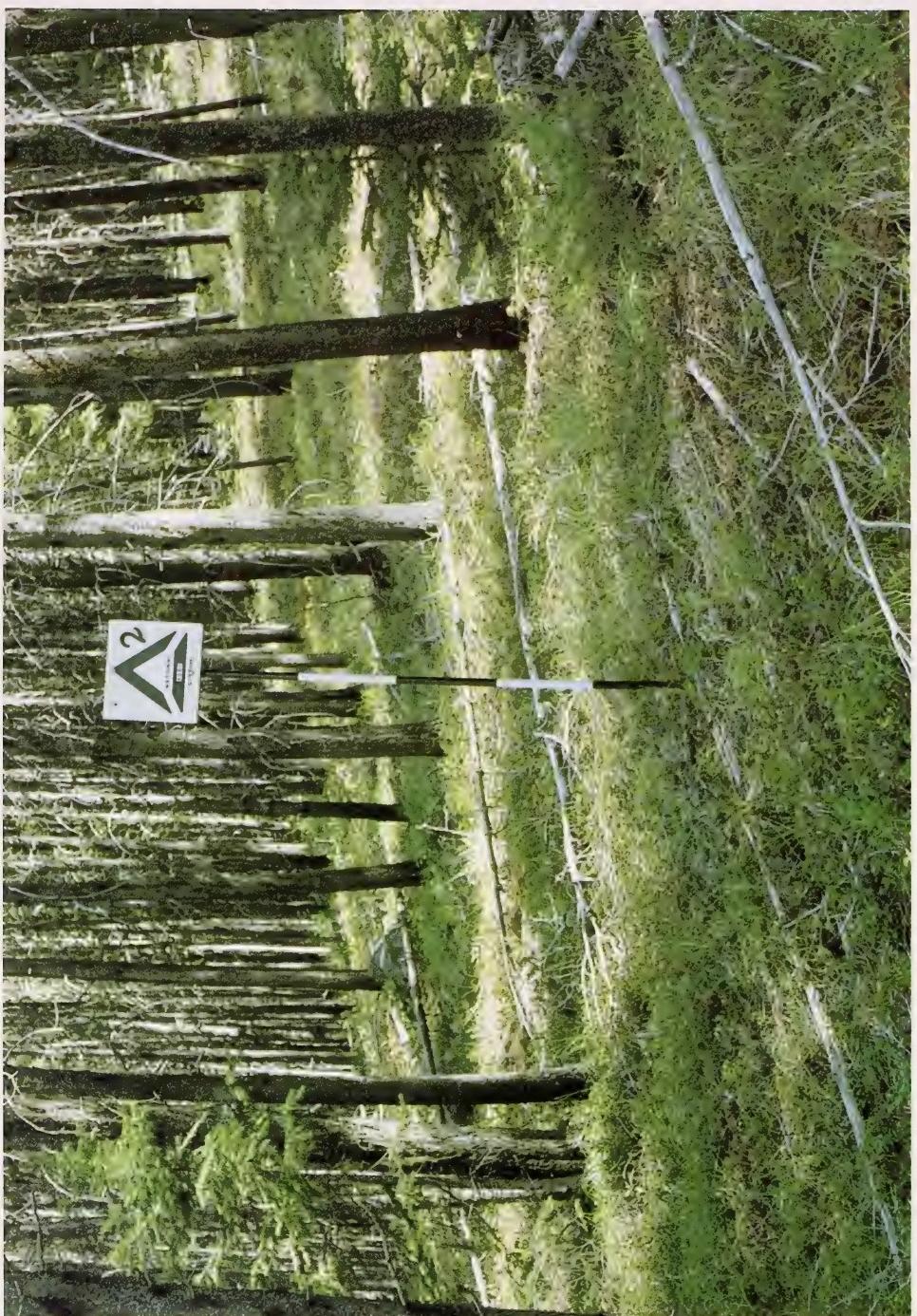
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SERIES 1

LODGEPOLE PINE

SAF COVER TYPE 218



DATA SHEET

2

FOREST COVER TYPE: SAF NO.	218	Stand No.	2																																																																																																																														
MONTANA HABITAT TYPE: NO.	640	Lodgepole pine																																																																																																																															
DOWN & DEAD WOODY FUEL LOADINGS <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2"></th> <th colspan="2">OTHER FUEL DATA</th> <th colspan="2">FIRE POTENTIAL RATING</th> </tr> <tr> <th>Size Class (Inches)</th> <th>T/ac</th> <th>Weight Kg/m²</th> <th>Average duff depth: 3 + fuels:</th> <th>1.3 3 .30</th> <th>in cm</th> </tr> </thead> <tbody> <tr> <td>0-0.25</td> <td>0.5</td> <td>0.11</td> <td>Average diameter, 3 + fuels:</td> <td>4 .6</td> <td>in</td> </tr> <tr> <td>0.25-1</td> <td>0.7</td> <td>0.16</td> <td></td> <td>11.68</td> <td>cm</td> </tr> <tr> <td>1-3</td> <td>0.9</td> <td>0.20</td> <td>Percent rotten, 3 + fuels:</td> <td>52</td> <td>%</td> </tr> <tr> <td>Subtotal 0.3</td> <td>2.1</td> <td>0.47</td> <td>Volume of sound 3 + fuels:</td> <td>5.3</td> <td>ft³/ac</td> </tr> <tr> <td></td> <td>3.6</td> <td>0.8</td> <td></td> <td>3.7</td> <td>m³/ha</td> </tr> <tr> <td>6-10</td> <td>0</td> <td>0</td> <td></td> <td></td> <td></td> </tr> <tr> <td>10-20</td> <td>0.6</td> <td>0.13</td> <td></td> <td></td> <td></td> </tr> <tr> <td>20+</td> <td>0</td> <td>0</td> <td></td> <td></td> <td></td> </tr> <tr> <td>SUBTOTAL 3+</td> <td>1.4</td> <td>0.31</td> <td></td> <td></td> <td></td> </tr> <tr> <td>TOTAL</td> <td>3.5</td> <td>0.78</td> <td></td> <td></td> <td></td> </tr> <tr> <td>NFDRS FUEL MODEL</td> <td colspan="2">STYLIZED FUEL MODEL</td> <td></td> <td></td> <td></td> </tr> <tr> <td>H</td> <td colspan="2">8</td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>Average slope: 40 %</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>Aspect: south</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>Elevation: 4350 ft</td> <td>1326 m</td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>Remarks:</td> <td></td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>Photo taken:</td> <td>9/15/76</td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td>By:</td> <td>S. Cox</td> <td></td> </tr> <tr> <td></td> <td colspan="2"></td> <td colspan="3">Fire Ecology Group Seven</td> </tr> </tbody> </table>						OTHER FUEL DATA		FIRE POTENTIAL RATING		Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 3 + fuels:	1.3 3 .30	in cm	0-0.25	0.5	0.11	Average diameter, 3 + fuels:	4 .6	in	0.25-1	0.7	0.16		11.68	cm	1-3	0.9	0.20	Percent rotten, 3 + fuels:	52	%	Subtotal 0.3	2.1	0.47	Volume of sound 3 + fuels:	5.3	ft ³ /ac		3.6	0.8		3.7	m ³ /ha	6-10	0	0				10-20	0.6	0.13				20+	0	0				SUBTOTAL 3+	1.4	0.31				TOTAL	3.5	0.78				NFDRS FUEL MODEL	STYLIZED FUEL MODEL					H	8								Average slope: 40 %						Aspect: south						Elevation: 4350 ft	1326 m					Remarks:						Photo taken:	9/15/76					By:	S. Cox					Fire Ecology Group Seven		
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DATA SHEET

FOREST COVER TYPE: SAF NO. 218 _____, Lodgepole pine _____
MONTANA HABITAT TYPE: NO. 283 _____, Douglas-fir/blue huckleberry - beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	0.7 1.78 in cm	Based on an average bad day: 85° temp., 15-20% RH, 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.2	Average diameter, 3+ fuels:	4.0 in	Rate of Spread:	medium
0.25-1	0.4	10.16 cm	Intensity:	low	
1-3	0.7	Percent rotten, 3+ fuels:	23 %	Torching:	nil
Subtotal 0-3	1.3	Volume of sound 3+ fuels:	171 ft ³ /ac 12.0 m ³ /ha	Crowning:	nil
3-6	1.9	0.43		Resistance to control:	low
6-10	0.8	0.18			
10-20	0	0	Age of overstory dominants: PSME 150 yrs	Overall Fire Potential	LOW
20+	0	0	PICO 107 yrs		
SUBTOTAL 3+	2.7	0.61			
TOTAL	4.0	0.90	Average slope: Aspect: 24 % Elevation: 5390 ft 1643 m		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Remarks:		
H	8				
					Fire Ecology Group Six



DATA SHEET

FOREST COVER TYPE: SAF NO.	MONTANA HABITAT TYPE: NO.	Stand No.	1
218	640	Lodgepole pine	Subalpine fir/dwarf huckleberry (ABLA/VACA)

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	T/ac	Weight kg/m ²	Avg. duff depth:	1.4 in cm	85.90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	Rate of Spread:	medium
0.0-25	0.6	0.13	Average diameter, 3+ fuels:	4.2 in cm	Intensity:	low	low
0.25-1	0.9	0.20		10.67 cm	Torching:	low	low
1-3	3.8	0.85	Percent rotten, 3+ fuels:	12 %	Crowning:	low	low
Subtotal 0.3	5.3	1.18	Volume of sound 3+ fuels:	131 ft ³ /ac m ³ /ha	Resistance to control:	low	low
3-6	1.4	0.31	STAND AND SITE DATA				Overall Fire Potential LOW
6-10	0.4	0.08	Age of overstory dominants:	80 yrs PICO	STAND LOCATION		
10-20	0	0		65 yrs PSME	National Forest:	Lolo	
20+	0	0			Ranger District:	Missoula	
SUBTOTAL 3+	1.8	0.39			Drainage:	E. Fk. Lolo Cr.	
TOTAL	7.1	1.57	Average slope:	50 %	Photo taken:	9/15/76	
WFDRS FUEL MODEL		STYLIZED FUEL MODEL	Aspect:	south 4350 ft	By:	S. Cox	
Remarks:							
Fire Ecology Group Seven							



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 Lodgepole pine
MONTANA HABITAT TYPE: NO. 720 Subalpine fir/blue huckleberry (ABLA/VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.4 6.10	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., mild wind, 4 weeks since rain		
0.0-25	0.3	0.07	Average diameter, 3+ fuels:	3.8	in	Rate of Spread: medium		
0.25-1	1.2	0.27		9.65	cm	Intensity: low		
1-3	5.1	1.14	Percent rotten, 3+ fuels:	16	%	Torching: low		
Subtotal	6.6	1.48	Volume of sound 3+ fuels:	360	ft ³ /ac	Crowning: low		
0.3				25.2	m ³ /ha	Resistance to control: low		
3-6	4.3	0.96	STAND AND SITE DATA			Overall Fire Potential: LOW		
6-10	1.1	0.25	Age of overstory dominants: PICO	123	yrs	STAND LOCATION		
10-20	0	0				National Forest: Lewis & Clark		
20+	0	0				Ranger District: White Sulphur Springs		
SUBTOTAL 3+	5.4	1.21				Drainage: Fournie Cr.		
TOTAL	12.0	2.69	Average slope: 11 %					
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect: northwest					
H/G	8/10		Elevation: 6090 ft	1856 m		Photo taken: 8/10/78		
	Fire Ecology Group Seven					By: W. C. Fischer		
	Remarks:							



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 **Stand No.** 82
Lodgepole pine

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	T/ac	Weight kg/m ²		Average duff depth: cm	1.5 in	85-90 ° temp., 15-20% RH., 10-15 mi/h wind, 4 weeks since rain	
0.0-0.25	0.3	0.07		Average diameter, 3+ fuels: cm	6.1 in	Rate of Spread: low	
0.25-1	0.3	0.07		15.49 cm		Intensity: low	
1-3	1.5	0.34		Percent rotten, 3+ fuels: %	89 %	Torching: low	
				Volume of sound 3+ fuels: ft ³ /ac	90 6.3 m ³ /ha	Crowning: low	
Subtotal 0.3	2.1	0.48				Resistance to control: low	
3-6	1.7	0.38				Overall Fire Potential LOW	
6-10	7.3	1.64					
10-20	1.6	0.36		Age of overstory dominants: PICO	55 yrs		
20+	0	0				National Forest: LoLo	
SUBTOTAL 3+	10.6	2.38				Ranger District: Missoula	
TOTAL	12.7	2.86				Drainage: Howard Cr.	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL		Average slope: Aspect:	30 southeast	% Elevation: ft	8/22/77
				1.347 m			
						Remarks: By: W. C. Fischer	
							Fire Ecology Group Nine



DATA SHEET

Stand No. 85

FOREST COVER TYPE: SAF NO. 218,
MONTANA HABITAT TYPE: NO. 283,

Lodgepole pine,
 Douglas-fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (inches)	T/ac	Weight kg/m ²
0-0.25	0.5	0.11
0.25-1	1.9	0.43
1-3	4.3	0.96
Subtotal	6.7	1.50
3-6	0.2	0.04
6-10	1.6	0.36
10-20	4.2	0.94
20+	0	0
SUBTOTAL 3+	6.0	1.34
TOTAL	12.7	2.84

OTHER FUEL DATA

Average duff depth:	2.2 5.59	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
Average diameter, 3+ fuels:	8.9 22.61	in cm	Rate of Spread: <u>low</u> Intensity: <u>medium</u>
Percent rotten, 3+ fuels:	98	%	Torching: <u>medium</u>
Volume of sound 3+ fuels:	11 0.8	ft ³ /ac m ³ /ha	Crowning: <u>low</u>
			Resistance to control: <u>medium</u>

STAND AND SITE DATA

Overall Fire Potential MEDIUM

STAND LOCATION

National Forest:	<u>LoLo</u>
Ranger District:	<u>Missoula</u>
Drainage:	<u>Howard Cr.</u>

Photo taken: 8/22/77
 By: W. C. Fischer

Fire Ecology Group Six

NFDRS FUEL MODEL **STYLIZED FUEL MODEL**

10

G



DATA SHEET

FOREST COVER TYPE: SAF NO.	218	Lodgepole pine
MONTANA HABITAT TYPE: NO.	283	Douglas-fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac	Weight Kg/m ²	Average duff depth:	1.0 2.54 cm	in cm	Based on an average bad day: 85-90 temp., 15-20% R.H., 10-15 mild wind, 4 weeks since rain	Rate of Spread:	Low
0-0.25	0.2	0.04	Average diameter, 3+ fuels:	3.7	in		Intensity:	Low
0.25-1	0.8	0.18		9.40	cm		Torching:	nil
1-3	3.7	0.83	Percent rotten, 3+ fuels:	10	%		Crowning:	nil
Subtotal	4.7	1.05	Volume of sound 3+ fuels:	580	ft³/ac		Resistance to control:	Low
				40.6	m³/ha			
STAND AND SITE DATA						Overall Fire Potential	LOW	
6-10	1.4	0.31	Age of overstory dominants:	PICO	120 yrs	STAND LOCATION		
10-20	0	0		PSME	95 yrs	National Forest:	Helena	
20+	0	0				Ranger District:	Lincoln	
SUBTOTAL 3+	8.1	1.81				Drainage:	Keep Cool Cr.	
TOTAL	12.8	2.86	Average slope:	15	%			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect:	southwest		Photo taken:	7/28/78	
			Elevation:	5120 ft	1561 m	By:	W. C. Fischer	
						Remarks:		
							Fire Ecology Group Six	
H	8							



DATA SHEET

FOREST COVER TYPE: SAF NO. 218, _____, Lodgepole pine
MONTANA HABITAT TYPE: NO. 940, _____, Lodgepole pine/grouse whortleberry (PICO/VASC)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	T/ac	Weight kg/m ²	Average duff depth: 3+ fuels:	1.9 4.83	in cm	Based on an average bad day: 85° 90° temp., 15-20% RH, 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.4	0.09	Average diameter, 3+ fuels:	3.5	in	Rate of Spread: medium		
0.25-1	1.9	0.43		8.89	cm	Intensity: medium		
1-3	8.5	1.91	Percent rotten, 3+ fuels:	15	%	Torching: low		
Subtotal	10.8	2.43	Volume of sound 3+ fuels:	157	ft ³ /ac	Crowning: low		
0.3					m ³ /ha	Resistance to control: low		
				11.0				
STAND AND SITE DATA								
Overall Fire Potential								
MEDIUM								
STAND LOCATION								
National Forest: Lewis & Clark								
Ranger District: White Sulphur Springs								
Drainage: Fourmile Cr.								
Remarks: Fire Ecology Group Seven								
NFDRS FUEL MODEL	STYLIZED FUEL MODEL							
G	10							
TOTAL	13.1	2.94	Average slope: 7 %					
3+			Aspect: northwest					
			Elevation: 6170 ft	1881	m			
			Photo taken:	8/10/78				
			By:	W. C. Fischer				



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 _____, Lodgepole pine
MONTANA HABITAT TYPE: NO. 250 _____, Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Kg/m ²	Average duff depth:	1.5 3.81 in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.2	0.04	Average diameter, 3+ fuels:	6.5 16.51 in cm	Rate of Spread:	medium
0.25-1	0.8	0.18	Percent rotten, 3+ fuels:	99 %	Intensity:	medium
1-3	1.7	0.38	Volume of sound 3+ fuels:	8 0.6 ft ³ /ac m ³ /ha	Torching:	medium
Subtotal		2.7	0.60		Crowning:	low
0-3					Resistance to control:	medium
3-6	1.2	0.27	STAND AND SITE DATA		Overall Fire Potential	MEDIUM
6-10	6.5	1.46	Age of overstory dominants: PICO _____ 51 yrs		STAND LOCATION	
10-20	2.8	0.63			National Forest:	Deerlodge
20+	0	0			Ranger District:	Philipsburg
SUBTOTAL 3+	10.5	2.36			Drainage:	Henderson Cr.
TOTAL	13.2	2.96				
NFDRS FUEL MODEL	STYLIZED FUEL MODEL				Remarks:	
H/G	8/10				Fire Ecology Groups Six (Westside) and Seven (Eastside)	



DATA SHEET

Stand No. 47A

FOREST COVER TYPE: SAF NO. 218,
MONTANA HABITAT TYPE: NO. 250,

Lodgepole pine
 Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.5 6.35	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 m/h wind, 4 weeks since rain		
0.0-25	0.1	0.02	Average diameter, 3+ fuels:	5.3	in	Rate of Spread: <u>low</u>		
0.25-1	1.0	0.22		13.46	cm	Intensity: <u>low</u>		
1.3	3.3	0.74	Percent rotten, 3+ fuels:	90	%	Torching: <u>low</u>		
Subtotal	4.4	0.98	Volume of sound 3+ fuels:	102	ft ² /ac	Crowning: <u>low</u>		
0.3				7.1	m ³ /ha	Resistance to control: <u>low</u>		
3-6	3.3	0.74	STAND AND SITE DATA			Overall Fire Potential	LOW	
6-10	5.4	1.21	Age of overstory dominants:			STAND LOCATION		
10-20	4.0	0.90	PSME	200+	yrs	National Forest:	Deerlodge	
20+	0	0	PICO	180	yrs	Ranger District:	Philipsburg	
SUBTOTAL 3+	12.7	2.85				Drainage:	Henderson Cr.	
TOTAL	17.1	3.83	Average slope: <u>8</u> %					
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect: <u>northwest</u>					
			Elevation: <u>5950</u> ft	<u>1814</u> m				
			Remarks:					
H/G	8/10		Photo taken:	9/25/78				
			By:	W. C. Fischer				
			Fire Ecology Group	Seven				



DATA SHEET

FOREST COVER TYPE: SAF NO.	218	Lodgepole pine
MONTANA HABITAT TYPE: NO.	662	Subalpine fir/twinflower-beargrass phase (ABLA/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.1 5.33	in cm	Based on an average bad day, 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.4	0.09	Average diameter, 3+ fuels:	5.4	in	Rate of Spread: <u>Low</u>	<u>Low</u>	
0.25-1	2.1	0.47		13.72	cm	Intensity: <u>medium</u>		
1-3	2.6	0.58	Percent rotten, 3+ fuels:	43	%	Torching: <u>Low</u>	<u>Low</u>	
			Volume of sound 3+ fuels:	617	ft ³ /ac	Crowning: <u>Low</u>	<u>Low</u>	
				43.2	m ³ /ha	Resistance to control: <u>medium</u>	<u>medium</u>	
Subtotal	5.1	1.14				Overall Fire Potential	MEDIUM	
0-3								
3-6	4.7	1.05						
6-10	7.4	1.66						
10-20	1.3	0.29	Age of overstory dominants: PSME	155 yrs		STAND LOCATION		
20+	0	0	LAOC	70 yrs		National Forest: <u>LoLo</u>		
			PICO	63 yrs		Ranger District: <u>Missoula</u>		
SUBTOTAL	13.4	3.00				Drainage: <u>N. Fk. Howard Cr.</u>		
TOTAL	18.5	4.14						
NFDRS FUEL MODEL			STYLIZED FUEL MODEL					
K	11							



DATA SHEET

Stand No. 83

CODEFEST COVER TYPE: SAE NO

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Class T/ac	Weight kg/m ²	Average duff depth: _____ in cm	Average diameter, 3+ fuels: 4.3 _____ in cm	Rate of Spread: _____ medium	Based on an average bad day: 85-90° temp., 15-20% RH, 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.5	0.11					
0.25-1	1.7	0.38					
1-3	1.9	0.43					
Subtotal 0.3	4.1	0.92					
3-6	10.0	2.24	STAND AND SITE DATA				MEDIUM
6-10	3.0	0.67	Age of overstory dominants: P1CO _____ 50 yrs _____				
10-20	2.1	0.47	LAOC _____ 50 yrs _____				
20+	0	0					
SUBTOTAL 3+	15.1	3.38					
TOTAL	19.2	4.30	Average slope: _____ Aspect: _____ Elevation: _____ Remarks: _____	12 southeast ft m old thinning slash	%		
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Photo taken: _____ By: _____				
			8/22/77 W. C. Fischer				

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10



DATA SHEET

Stand No. 92

FOREST COVER TYPE: SAF NO. 218
MONTANA HABITAT TYPE: NO. 691

Lodgepole pine
 Subalpine fir/beargrass-blue huckleberry phase (ABA/XETE-VAGL)

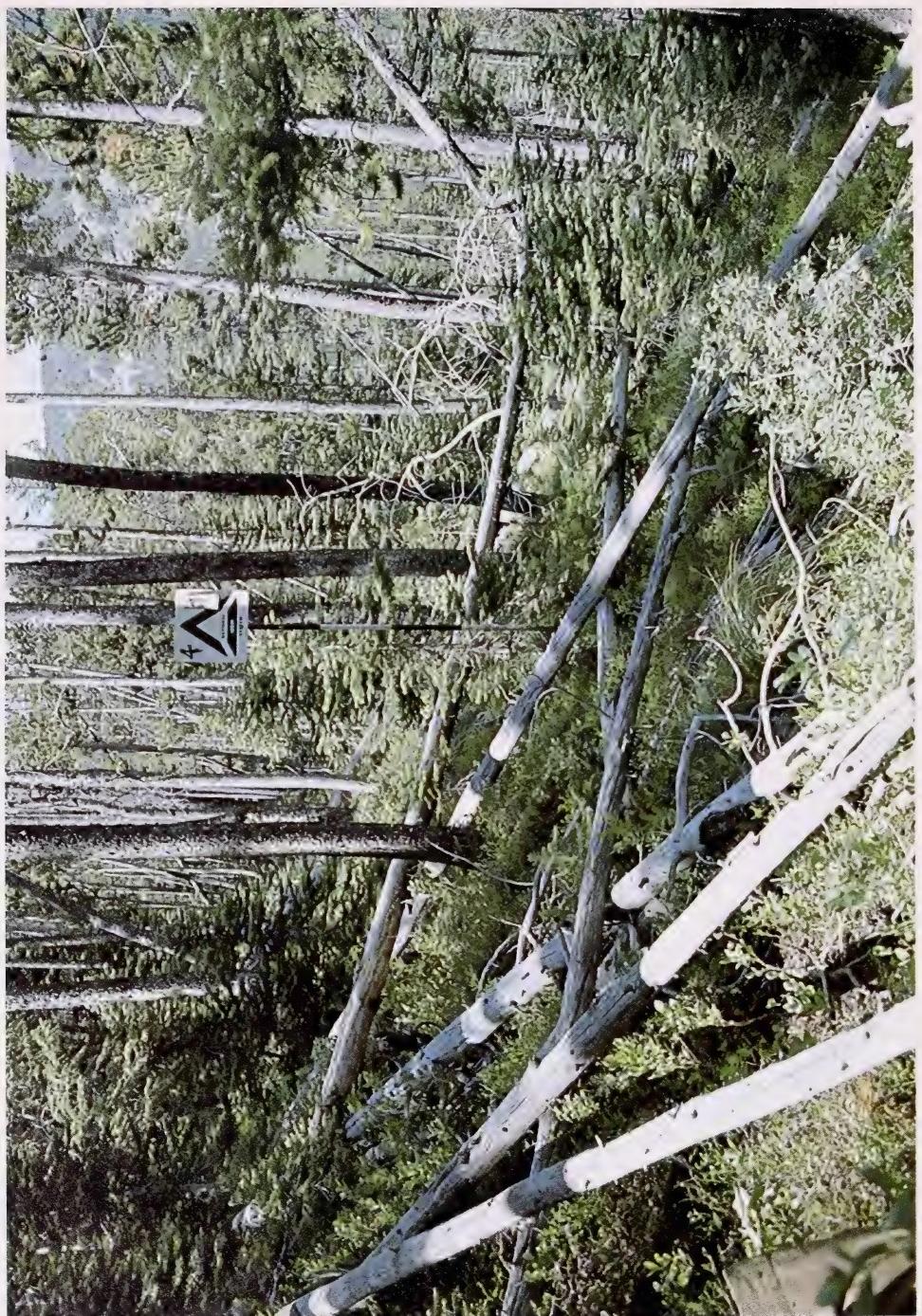
DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	Weight T/ac	Kg/m ²	Average duff depth:	1.5 3.81	in cm	Based on average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.0-25	0.6	0.13	Average diameter, 3+ fuels:	4.2	in	Rate of Spread:	medium	
0.25-1	1.9	0.43		10.67	cm	Intensity:	medium	
1-3	6.2	1.39	Percent rotten, 3+ fuels:	42	%	Torching:	low	
Subtotal	8.7	1.95	Volume of sound 3+ fuels:	498	ft ³ /ac	Crowning:	low	
0.3				34.9	m ³ /ha	Resistance to control:	medium	
3.6	6.6	1.48	STAND AND SITE DATA			Overall Fire Potential	medium	
6-10	2.7	0.61	Age of overstory dominants: LAC	280	yrs	STAND LOCATION		
10-20	1.5	0.34	PICO	55	yrs	National Forest:	LoLo	
20+	0	0				Ranger District:	Missoula	
SUBTOTAL 3+	10.8	2.43				Drainage:	Howard Cr.	
TOTAL	19.5	4.38	Average slope:	30	%			
			Aspect:	northwest				
			Elevation:	5270 ft	1606 m	Photo taken:	8/29/77	
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Remarks:	old thinning slash		By:	W. C. Fischer	
K/G		11/10	Fire Ecology Group Eight					



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 , Lodgepole pine
 MONTANA HABITAT TYPE: NO. 691 , Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-YAGL)

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA				FIRE POTENTIAL RATING			
Size Class (Inches)	Weight T/ac	Weight Kg/m^2	Average duff depth:	1.9 4.83	in cm	Average diameter, 3+ fuels:	4.4 11.18	in cm	Rate of Spread:	low	
0.0-2.5	0.3	0.07							Intensity:	medium	
0.25-1	1.4	0.31							Torching:	low	
1.3	4.5	1.01							Crowning:	low	
Subtotal	6.2	1.39	Percent rotten, 3+ fuels:	18	%	Volume of sound 3+ fuels:	932	'ft ³ /ac	Resistance to control:	low	
0.3											
3-6	8.0	1.79	STAND AND SITE DATA				Overall Fire Potential				
6-10	6.3	1.41	Age of overstory dominants:	PICO	128 yrs			LOW			
10-20	0	0		PSME	125 yrs			STAND LOCATION			
20+	0	0		ABLA	100 yrs			National Forest:	LoLo		
SUBTOTAL 3+	14.3	3.20						Ranger District:	Missoula		
TOTAL	20.5	4.59	Average slope:	northwest	60			Drainage:	Gilbert Cr.		
			Aspect:	5870 ft	1789 m						
			Elevation:								
			Remarks:								
NFDRS FUEL MODEL	STYLIZED FUEL MODEL										
G	10										



DATA SHEET

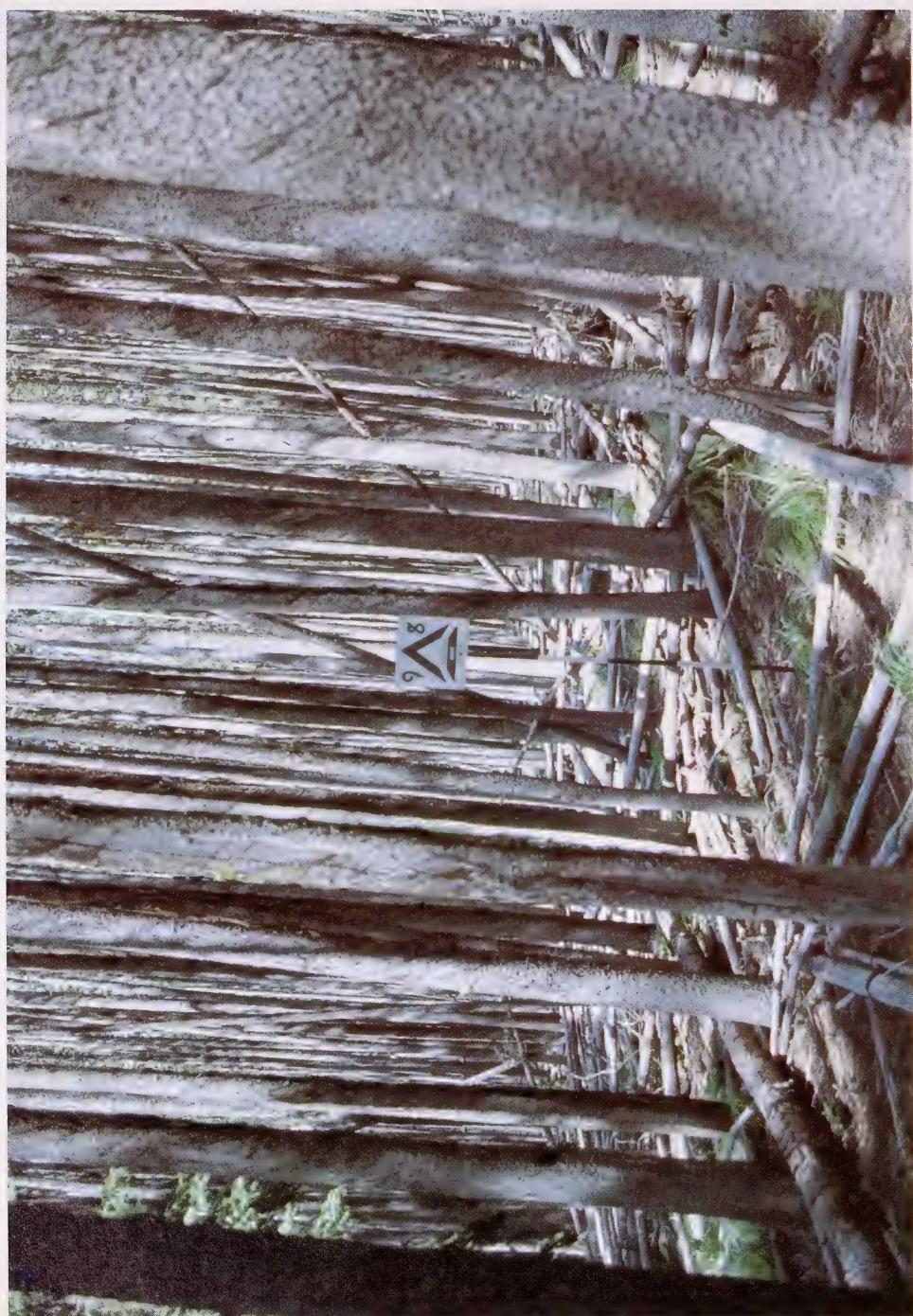
FOREST COVER TYPE: SAF NO.	218	Lodgepole pine
MONTANA HABITAT TYPE: NO.	670	Subalpine fir/mountain ash (CARIA/MEDFC)



DATA SHEET

FOREST COVER TYPE: SAF NO.	218	Lodgepole pine	Stand No.	49A
MONTANA HABITAT TYPE: NO.	640	Subalpine fir/dwarf huckleberry (ABHA/VACA)		

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA				FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²	Average duff depth:	2.3 5.84	in cm	Rate of Spread:	low	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-0.25	0.3	0.07	Average diameter, 3+ fuels:	3.6	in cm	Intensity:	medium		
0.25-1	1.4	0.31		9.14	cm	Torching:	low		
1-3	8.1	1.82	Percent rotten, 3+ fuels:	24	%	Crowning:	medium		
Subtotal 0.3	9.8	2.20	Volume of sound 3+ fuels:	780	ft ³ /ac m ³ /ha	Resistance to control:	medium		
3-6	11.8	2.65				Overall Fire Potential	MEDIUM		
6-10	1.0	0.22				STAND LOCATION			
10-20	0	0	Age of overstory dominants: PICO	162 yrs		National Forest:	Deerlodge		
20+	0	0				Ranger District:	Philipsburg		
SUBTOTAL 3+	12.8	2.87				Drainage:	Sand Basin Cr.		
TOTAL	22.6	5.07							
NFDRS FUEL MODEL	STYLIZED FUEL MODEL								
G	Fire Ecology Group Seven								
10									



DATA SHEET

FOREST COVER TYPE: SAF NO.	218	STAND NO.	98
MONTANA HABITAT TYPE: NO.	690	Subalpine fir/heargrass (ABA/XFTE)	Lodgepole pine

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac	Weight Kg/m ²	Average duff depth:	2.0 in cm	85-90° temp., 15-20% R.H., 10-15 mild wind, 4 weeks since rain	Based on an average bad day:	
0.0-0.25	0.3	0.07	Average diameter, 3+ fuels:	4.2 cm	Rate of Spread:	low	
0.25-1	1.2	0.27	Average diameter, 3+ fuels:	10.67 cm	Intensity:	medium	
1-3	5.3	1.19	Percent rotten, 3+ fuels:	23 %	Torching:	low	
			Volume of sound 3+ fuels:	1059 ft ³ /ac 74.1 m ³ /ha	Crowning:	low	
Subtotal	6.8	1.53			Resistance to control:	medium	
0.3							
3.6	10.8	2.42	STAND AND SITE DATA				MEDIUM
6-10	6.3	1.41	Age of overstory dominants:	145 yrs	STAND LOCATION		
10-20	0	0	PICO		National Forest:	Lolo	
20+	0	0	PSME	130 yrs	Ranger District:	Missoula	
SUBTOTAL	17.1	3.83	PICEA	120 yrs	Drainage:	W. Fk. Tyle Cr.	
3+							
TOTAL	23.9	5.36					
NFDRS FUEL MODEL		STYLIZED FUEL MODEL					
G		10					
Remarks:							
Fire Ecology Group Seven							
By:							
W. C. Fischer							
Photo taken:							
6/13/78							



DATA SHEET

FOREST COVER TYPE: SAF NO. 218, Lodgepole pine
MONTANA HABITAT TYPE: NO. 691, Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	Weight T/ac	kg/m ²	Average duff depth:	2.8 7.11	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 m/h wind, 4 weeks since rain		
0.0-25	0.5	0.11	Average diameter, 3+ fuels:	5.5	in	Rate of Spread:	medium	
0.25-1	1.7	0.38		13.97	cm	Intensity:	medium	
1-3	1.3	0.29	Percent rotten, 3+ fuels:	40	%	Torching:	low	
Subtotal	3.5	0.78	Volume of sound 3+ fuels:	998	ft ³ /ac	Crowning:	low	
0.3				69.8	m ³ /ha	Resistance to control:	medium	
3-6	5.2	1.17	STAND AND SITE DATA			Overall Fire Potential	MEDIUM	
6-10	11.5	2.58						
10-20	4.1	0.92				STAND LOCATION		
20+	0	0				National Forest:	LoLo	
SUBTOTAL 3+	20.8	4.67				Ranger District:	Missoula	
TOTAL	24.8	5.45				Drainage:	Rattlesnake Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL							
G	10					Photo taken:	7/13/77	
						By:	W. C. Fischer	
						Remarks:	Fire Ecology Group Eight	



DATA SHEET

MONTANA HABITAT TYPE: SAF NO.	FOREST COVER TYPE: SAF NO.	STAND SITE	STAND NO.	60
Subalpine fir/queencup beadly-beargrass phase (ABLA/CLUN-XETE)	218	Lodgepole pine		
624				

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING				
Size Class (Inches)	Weight T/ac	Weight Kg/m^2	Average duff depth:	2.1 in cm	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mイル wind, 4 weeks since rain	Rate of Spread:	low		
0.0-0.25	0.3	0.07	Average diameter, 3+ fuels:	5.4 in cm	in cm		Intensity:	medium		
0.25-1	0.8	0.18		13.72 cm	cm		Torching:	medium		
1-3	0.4	0.09	Percent rotten, 3+ fuels:	28 %	%		Crowning:	low		
<hr/>			Volume of sound 3+ fuels:	1516 ft ³ /ac 106.1 m^3/ha			Resistance to control:	medium		
Subtotal 0-3	1.5	0.34	STAND AND SITE DATA			Overall Fire Potential	MEDIUM			
3-6	7.5	1.68	<hr/>			STAND LOCATION				
6-10	12.3	2.76	<hr/>			Age of overstory dominants:	<hr/>			
10-20	6.5	1.46	<hr/>			LAOC	432 yrs			
20+	0	0	<hr/>			PICO	147 yrs			
SUBTOTAL 3+	26.3	5.90	<hr/>			PICEA	100 yrs			
TOTAL	27.8	6.24	<hr/>			Average slope:	14 Southeast %			
NFDRS FUEL MODEL			<hr/>			Aspect:	5140 ft	1567 m		
STYLIZED FUEL MODEL			<hr/>			Elevation:				
<hr/>			<hr/>			Remarks:	<hr/>			
<hr/>			<hr/>			Photo taken:	7/13/77			
<hr/>			<hr/>			By:	W. C. Fischer			
<hr/>			<hr/>			Fire Ecology Group Nine				
<hr/>			<hr/>			10				
<hr/>			<hr/>			G				



DATA SHEET

FOREST COVER TYPE: SAF NO. 218 _____, Lodgepole pine
MONTANA HABITAT TYPE: NO. 283 _____, Douglas fir/blue huckleberry-beargrass phase (PSME/VAGL-XE/TE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.1 5.33	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	1.2	0.27	Average diameter, 3+ fuels:	9.0	in	Rate of Spread:	high	
0.25-1	3.1	0.69		22.86	cm	Intensity:	high	
1-3	3.1	0.69	Percent rotten, 3+ fuels:	99	%	Torching:	extreme	
			Volume of sound 3+ fuels:	9	ft ³ /ac	Crowning:	extreme	
Subtotal	0.3	7.4	1.65	0.6	m³/ha	Resistance to control:	high	
3.6	0.3	0.07	STAND AND SITE DATA			Overall Fire Potential	EXTREME	
6-10	7.3	1.64	Age of overstory dominants:			STAND LOCATION		
10-20	13.3	2.98	LAOC	77	yrs	National Forest:	LoLo	
20+	0	0	PICO	77	yrs	Ranger District:	Missoula	
SUBTOTAL	20.9	4.69	PSME	70	yrs	Drainage:	Cloudburst Cr.	
TOTAL	28.3	6.34						
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Average slope:	50	%			
			Aspect:	south				
			Elevation:	5320	ft	Photo taken:	9/16/76	
					m	By:	S. Cox	
			Remarks:					
			Fire Ecology Group Six					
G	10							



DATA SHEET

FOREST COVER TYPE: SAF NO. _____ 218 _____, Lodgepole pine
MONTANA HABITAT TYPE: NO. _____ 283 _____, Douglas fir/blue huckleberry-beargrass phase (PSME/VAGL-XETE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight t/ac kg/m ²	Average duff depth:	1.2 3.05 in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.3	Average diameter, 3+ fuels:	5.0	Rate of Spread:	medium
0.25-1	1.4	Intensity:	12.70	Torching:	medium
1-3	2.1	Percent rotten, 3+ fuels:	13	Crowning:	low
Subtotal	3.8	Volume of sound 3+ fuels:	185.8 130.0 ft ³ /ac m ³ /ha	Resistance to control:	low
STAND AND SITE DATA		Overall Fire Potential		MEDIUM	
6-10	10.8	Age of overstory dominants:	PICO 170 yrs	STAND LOCATION	
10-20	14.6		PSME 140 yrs	National Forest:	LoLo
20+	2.42			Ranger District:	Missoula
SUBTOTAL	0			Drainage:	Gilbert Cr.
3+	0				
TOTAL	30.2	Average slope:	60 southwest %		
		Aspect:	6030 ft 1838 m	Photo taken:	7/6/77
		Elevation:		By:	W. C. Fischer
		Remarks:			
		Fire Ecology Group Six			
		NFDRS FUEL MODEL	STYLIZED FUEL MODEL		
		G	10		



DATA SHEET

Stand No. 48A

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 250

Douglas-fir/dwarf huckleberry (PSME/VACA)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: _____ in cm
0.0-25	0.2	0.04	Average diameter, 3+ fuels: _____ in cm
0.25-1	1.0	0.22	6.4 _____ 16.26 _____ cm
1-3	1.2	0.27	Percent rotten, 3+ fuels: _____ 66 _____ %
Subtotal 0-3	2.4	0.53	Volume of sound 3+ fuels: 790 ft ³ /ac 55.3 m ³ /ha
3-6	4.2	0.94	
6-10	14.9	3.34	
10-20	10.2	2.29	Age of overstory dominants: PICO _____ 130 yrs
20+	0	0	PSME _____ 114 yrs
SUBTOTAL 3+	29.3	6.57	
TOTAL	31.7	7.10	

OTHER FUEL DATA

FIRE POTENTIAL RATING	
Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
Rate of Spread:	high
Intensity:	medium
Torching:	high
Crowning:	medium
Resistance to control:	medium

STAND AND SITE DATA

NFDRS FUEL MODEL	STYLIZED FUEL MODEL	STAND LOCATION
G	10	Overall Fire Potential MEDIUM
		National Forest: Deerlodge _____
		Ranger District: Phillipsburg _____
		Drainage: Henderson Cr. _____
		Photo taken: 9/25/78
		By: W. C. Fischer
		Fire Ecology Group Six (westside) and Seven (eastside)



DATA SHEET

Stand No. 11

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 691

Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	1.2 in 3.05 cm	Average diameter, 3+ fuels: 5.4 in 13.72 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 m/h wind, 4 weeks since rain	Rate of Spread: low	Intensity: medium
0-0.25	0.5	0.11	Percent rotten, 3+ fuels:	34 %	Torching:	low		
0.25-1	1.5	0.34	Volume of sound 3+ fuels:	1328 ft ³ /ac 92.9 m ³ /ha	Crowning:	low		
1-3	5.0	1.12	Subtotal	7.0 1.57	Resistance to control:	low		
					Overall Fire Potential	LOW		
			STAND AND SITE DATA			STAND LOCATION		
3-6	7.0	1.57	Age of overstory dominants:	PICO 60 yrs		National Forest:	Lolo	
6-10	4.1	0.92				Ranger District:	Missoula	
10-20	13.9	3.12				Drainage:	Cloudburst Cr.	
20+	0	0						
SUBTOTAL 3+	25.0	5.61						
TOTAL	32.0	7.18	Average slope:	10 %				
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect:	north	Elevation: 5760 ft 1756 m			
G	10		Remarks:	small amount of pole and post cutting slash present				
	Fire Ecology Group Eight							
	Photo taken: 9/21/76							
	By: W. C. Fischer							





DATA SHEET

Stand No. 27

FOREST COVER TYPE: SAF NO. 218

Lodgepole pine

MONTANA HABITAT TYPE: NO. 292

Douglas-fir/twinflower-pinegrass phase (PSME/LIBQ-CARU)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (inches)	Weight T/ac	Kg/m ²
0-0.25	0.3	0.07
0.25-1	1.7	0.38
1-3	3.2	0.72
Subtotal	5.2	1.17
3-6	5.0	1.12
6-10	14.3	3.21
10-20	8.8	1.97
20+	0	0
SUBTOTAL	28.1	6.30
TOTAL	33.3	7.47

OTHER FUEL DATA

Average duff depth:	2.3	in	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
	5.84	cm	
Average diameter, 3+ fuels:	6.3	in	
	16.00	cm	
Percent rotten, 3+ fuels:	93	%	
Volume of sound 3+ fuels:	152	ft ³ /ac	
	10.6	m ³ /ha	

STAND AND SITE DATA

Age of overstory dominants: PSME	140 yrs	STAND LOCATION
National Forest:	Lolo	
Ranger District:	Missoula	
Drainage:	W. Flk. Swartz Cr.	

FIRE POTENTIAL RATING

Rate of Spread:	medium
Intensity:	medium
Torching:	medium

Crowning:	medium
Resistance to control:	medium

Overall Fire Potential	MEDIUM
National Forest:	Lolo
Ranger District:	Missoula
Drainage:	W. Flk. Swartz Cr.
Remarks:	Fire Ecology Group Six

Photo taken: 6/20/77

By: W. C. Fischer

NFDRS FUEL MODEL **STYLIZED FUEL MODEL**

G **10**



DATA SHEET

Stand No. 81

FOREST COVER TYPE: SAF NO. 218
MONTANA HABITAT TYPE: NO. 470

Lodgepole pine
 Spruce/twinflower (PICEA/LIBO)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (inches)	T/ac	Weight kg/m ²	Average duff depth:	1.6 4.06	in cm
0.025	0.3	0.07	Average diameter, 3+ fuels:	7.7	in
0.25-1	0.8	0.18		19.56	cm
1-3	2.4	0.54	Percent rotten, 3+ fuels:	31	%
Subtotal	3.5	0.79	Volume of sound 3+ fuels:	1722	ft³/ac m³/ha
3-6	2.8	0.63	STAND AND SITE DATA		
6-10	6.3	1.41	Age of overstory dominants: PICO _____ 50 yrs		
10-20	22.1	4.95			
20+	0	0			
SUBTOTAL 3+	31.2	6.99			
TOTAL	34.7	7.78			

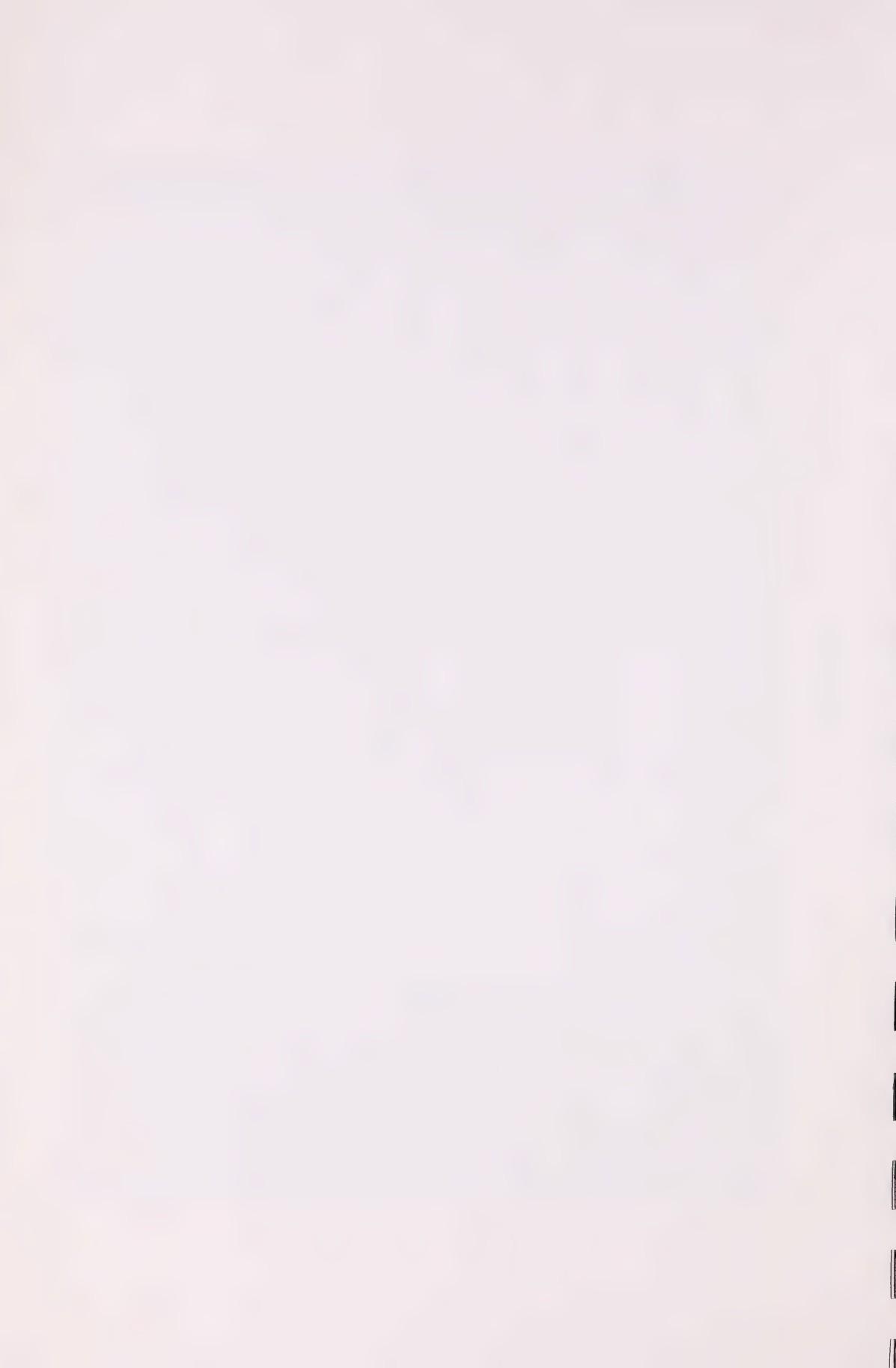
OTHER FUEL DATA

Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	Rate of Spread: low
Intensity: low	Torching: low
Crowning: low	Resistance to control: low
Overall Fire Potential: Low	

STAND LOCATION

National Forest: Lolo	Ranger District: Missoula
Drainage: Howard Cr.	
Remarks: _____	
Photo taken: 8/22/77	
By: W. C. Fischer	
Fire Ecology Group Seven	

NFDRS FUEL MODEL **STYLIZED FUEL MODEL**
G 10



SERIES 2

ENGELMANN SPRUCE - SUBALPINE FIR

SAF COVER TYPE 206



DATA SHEET

Stand No. 45

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 691

Engelmann spruce - subalpine fir
Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (Inches)	T/ac	Weight Kg/m^2	Average duff depth: $\frac{1.3}{3.30}$ in $\frac{cm}{cm}$
0.025	0.3	0.07	Average diameter, 3+ fuels: $\frac{3.0}{7.62}$ in $\frac{cm}{cm}$
0.25-1	0.6	0.13	Percent rotten, 3+ fuels: $\frac{100}{%$
1-3	0.3	0.07	Volume of sound 3+ fuels: $\frac{0}{0}$ ft ³ /ac $\frac{0}{0}$ m ³ /ha
Subtotal	1.2	0.27	
3-6	0.1	0.02	
6-10	0	0	Age of overstory dominants: PSME 86 yrs
10-20	0	0	PICO 57 yrs
20+	0	0	ABLA 55 yrs
SUBTOTAL	3+	0.1	
TOTAL	1.3	0.29	

OTHER FUEL DATA

FIRE POTENTIAL RATING		
Based on an average bad day: 85-90 ° temp., 15-20% RH, m/h wind, 4 weeks since rain		
Rate of Spread:	low	
Intensity:	low	
Torching:	low	
Crowning:	low	
Resistance to control:	low	
Overall Fire Potential	LOW	

STAND AND SITE DATA

STAND LOCATION		
National Forest:	Lolo	
Ranger District:	Missoula	
Drainage:	Gilbert Cr.	
Remarks:	Fire Ecology Group Eight	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	
H	8	



DATA SHEET

FOREST COVER TYPE: SAF NO. 206, Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 691, Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	T/ac	Weight Kg/m ²	Average duff depth:	2.9 7.37	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.0-25	0.4	0.09	Average diameter, 3+ fuels:	3.3	in	Rate of Spread:	low	
0.25-1	1.9	0.43		8.38	cm	Intensity:	medium	
1-3	3.3	0.74	Percent rotten, 3+ fuels:	79	%	Torching:	medium	
			Volume of sound 3+ fuels:	14	ft ³ /ac	Crowning:	high	
				1.0	m ³ /ha	Resistance to control:	medium	
Subtotal	5.6	1.26	STAND AND SITE DATA			Overall Fire Potential	MEDIUM	
3-6	0.9	0.20						
6-10	0	0				STAND LOCATION		
10-20	0	0				National Forest:	Kootenai	
20+	0	0				Ranger District:	Libby	
SUBTOTAL 3+	0.9	0.20				Drainage:	Hennesey Cr.	
TOTAL	6.5	1.46						
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Average slope:	6	%			
			Aspect:	5480	southwest	Elevation:	1670 m	
						Photo taken:	6/26/78	
						By:	W. C. Fischer	
H		8						
Fire Ecology Group Eight								



DATA SHEET

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 670



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	39
MONTANA HABITAT TYPE: NO.	670		Engelmann spruce - subalpine fir Subalpine fir/menziesia (ABLA/MEFE)
DOWN & DEAD WOODY FUEL LOADINGS			
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth: cm
0.0-25	0.1	0.02	Average diameter, 3+ fuels: in cm
0.25-1	0.4	0.09	11.43
1-3	1.4	0.09	Percent rotten, 3+ fuels: 42 %
Subtotal	0.3	0.20	Volume of sound 3+ fuels: ft ³ /ac m ³ /ha
3-6	3.3	0.74	STAND AND SITE DATA
6-10	3.0	0.67	Age of overstory dominants: PICO 130 yrs
10-20	0	0	ABLA 110 yrs
20+	0	0	PIAL 105 yrs
SUBTOTAL 3+	6.3	1.41	
TOTAL	7.2	1.61	Average slope: Aspect: northwest Elevation: 6,135 ft 1870 m
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Photo taken: 6/23/77 By: W. C. Fischer
H			Remarks: Fire Ecology Group Nine
8			
FIRE POTENTIAL RATING			
			Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
			Rate of Spread: low
			Intensity: low
			Torching: low
			Crowning: low
			Resistance to control: low
			Overall Fire Potential: LOW
STAND LOCATION			
			National Forest: Lolo
			Ranger District: Missoula
			Drainage: Gilbert Cr.



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	35
MONTANA HABITAT TYPE: NO.	670		

Engelmann spruce - subalpine fir
Subalpine fir/menziesia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac <i>Kg/m²</i>	Average duff depth:	0.9 2.29 in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.0-0.25	0.2	0.04	Average diameter, 3+ fuels:	3.7 in	Rate of Spread: low	
0.25-1	1.0	0.22		9.40 cm	Intensity: low	
1.3	3.3	0.74	Percent rotten, 3+ fuels:	22 %	Torching: low	
			Volume of sound 3+ fuels:	282 ft ³ /ac 19.7 m ³ /ha	Crowning: low	
Subtotal	0.3	4.5	1.00	Resistance to control:	low	
3.6	4.5	1.01	STAND AND SITE DATA		Overall Fire Potential LOW	
6-10	0	0	Age of overstory dominants:	110 yrs	STAND LOCATION	
10-20	0	0	PICO		National Forest:	LoLo
20+	0	0			Ranger District:	Missoula
SUBTOTAL 3+	3+	4.5	1.01		Drainage:	Gilbert Cr.
TOTAL		9.0	2.01	Average slope: 9 Aspect: northwest		
MFORS FUEL MODEL		STYLIZED FUEL MODEL		Elevation: 6640 ft 2024 m	Photo taken:	6/23/77
H				Remarks:	By:	W. C. Fischer
						Fire Ecology Group Nine



DATA SHEET

FOREST COVER TYPE: SAF NO.	206		Engelmann spruce - Subalpine fir
MONTANA HABITAT TYPE: NO.	691		Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth: cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.6	0.13	Average diameter, 3+ fuels: in	Rate of Spread:	medium
0.25-1	1.5	0.34	4.8 12.19	Intensity:	medium
1-3	2.9	0.65	Percent rotten, 3+ fuels: % 57	Torching:	low
			Volume of sound 3+ fuels: ft ³ /ac 150 10.5 m ³ /ha	Crowning:	medium
Subtotal	5.0	1.12		Resistance to control:	medium
3.6	2.3	0.52	STAND AND SITE DATA		
6-10	2.0	0.45	Age of overstory dominants:		
10-20	0	0	PIMO	78 yrs	
20+	0	0	PSME	77 yrs	National Forest: Kootenai
			PICO	76 yrs	Ranger District: Libby
SUBTOTAL	4.3	0.97	ABGR	70 yrs	Drainage: Hennesey Cr.
TOTAL	9.3	2.09			Remarks: _____
MFDRS FUEL MODEL	STYLIZED FUEL MODEL		Average slope: Aspect: southwest Elevation: 5100 ft	16 % 1554 m	Photo taken: 6/26/78 By: W. C. Fischer
H/G	8/10				



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO.	621	Subalpine fir/queencup beadily-queencup beadily-phase (ABLA/CLUN-CLUN)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	T/ac kg/m ²	Average duff depth: 8.38 cm	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-2.5	0.8	0.18	Average diameter, 3+ fuels: 4.2 cm	Rate of Spread: low	
0.25-1	2.0	0.45	10.67 cm	Intensity: medium	
1-3	3.3	0.74	Percent rotten, 3+ fuels: 30 %	Torching: low	
Subtotal 0-3	6.1	1.37	Volume of sound 3+ fuels: 281 ft ³ /ac 19.7 m ³ /ha	Crowning: low	
3-6	3.0	0.67	STAND AND SITE DATA		Resistance to control: low
6-10	1.1	0.25	Age of overstory dominants: PSME 100 yrs	Overall Fire Potential LOW	
10-20	1.0	0.22	LAOC 93 yrs	STAND LOCATION	
20+	0	0	PICEA 87 yrs	National Forest: Lolo	
SUBTOTAL 3+	5.1	1.14	ABLA 80 yrs	Ranger District: Ninemile	
TOTAL	11.2	2.51	Average slope: 20 %	Drainage: Butler Cr.	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect: south	Photo taken: 9/24/76	
H/G	8/10		Elevation: 3450 ft 1052 m	By: W. C. Fischer	
	Fire Ecology Group Nine		Remarks: stream-side		



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **MONTANA HABITAT TYPE: NO.** 692

DOWN & DEAD WOODY FUEL LOADINGS			
Size Class (inches)	Weight T/ac	Weight Kg/m ³	
0-0.25	0.3	0.07	
0.25-1	1.0	0.22	
1-3	2.5	0.56	
Subtotal 0.3	3.8	0.85	
3-6	7.7	1.73	
6-10	1.3	0.29	
10-20	0	0	
20+	0	0	
SUBTOTAL 3+	9.0	2.02	
TOTAL	12.8	2.87	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		
H	8		

24A

Engelmann spruce - subalpine fir

Subalpine fir/beargrass-grouse whort leberry phase (ABIA/XETE-VASC)

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OTHER FUEL DATA

Size Class (inches)	T/ac	Weight Kg/m ²
0.025	0.3	0.07
0.25-1	1.0	0.22
1-3	2.5	0.56
Subtotal 0.3	3.8	0.85
3-6	7.7	1.73
6-10	1.3	0.29
10-20	0	0
20+	0	0
SUBTOTAL 3+	9.0	2.02
TOTAL	12.8	2.87
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	
H		8

OTHER FUEL DATA		FIRE POTENTIAL RATING
Average duff depth:	0.8 2.03	in cm
Average diameter, 3+ fuels:	3.7	in
Percent rotten, 3+ fuels:	9.40 8	cm %
Volume of sound 3+ fuels:	654 45.8	ft ³ /ac m ³ /ha
STAND AND SITE DATA		
Age of overstory dominants:		
PSME	160	yrs
PICO	140	yrs
ABLA	93	yrs
Average slope:	10	%
Aspect:	southeast	
Elevation:	5020	ft
Remarks:	1530	m
STAND LOCATION		
National Forest:	Helena	
Ranger District:	Lincoln	
Drainage:	Keep Cool Cr.	
Photo taken:	7/28/78	
By:	W. C. Fischer	
Fire Ecology Group Seven		

79



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	44
MONTANA HABITAT TYPE: NO.	670		

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	Weight T/ac	kg/m ²	Average duff depth:	1.6 4.06	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.6	0.13	Average diameter, 3+ fuels:	3.8	in	Rate of Spread:	high	
0.25-1	2.6	0.58		9.65	cm	Intensity:	high	
1-3	7.6	1.70	Percent rotten, 3+ fuels:	30	%	Torching:	high	
Subtotal			Volume of sound 3+ fuels:	372	ft ³ /ac m ³ /ha	Crowning:	medium	
0.3	10.8	2.41		26.0		Resistance to control:	medium	
3-6	5.5	1.23	STAND AND SITE DATA			Overall Fire Potential	HIGH	
6-10	1.1	0.25	Age of overstory dominants:			STAND LOCATION		
10-20	0	0	PICO	90	yrs	National Forest:	Lolo	
20+	0	0	PSME	70	yrs	Ranger District:	Missoula	
SUBTOTAL 3+	6.6	1.48				Drainage:	Gilbert Cr.	
TOTAL	17.4	3.89	Average slope:	60	%			
			Aspect:	north		Photo taken:	6/24/77	
			Elevation:	6300	ft m	By:	W. C. Fischer	
			Remarks:					
			NFDRS FUEL MODEL			STYLIZED FUEL MODEL		
			C			10		
			Fire Ecology Group Nine					



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	37
MONTANA HABITAT TYPE: NO.	670	Engelmann spruce - subalpine fir	
		Subalpine fir/menziesia (ABLA/MFE)	

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac <i>Kg/m²</i>	Average duff depth:	2.0 in 5.08 cm	Based on an average bad day: 85° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.025	0.3 0.07	Average diameter, 3+ fuels:	4.7 in 11.94 cm	Rate of Spread:	low
0.25-1	1.9 0.43	Percent rotten, 3+ fuels:	33 %	Intensity:	medium
1-3	4.1 0.92	Volume of sound 3+ fuels:	656 ft ³ /ac 45.9 m ³ /ha	Torching:	medium
Subtotal				Crowning:	medium
0.3	6.3 1.42			Resistance to control:	medium
3-6	6.4 1.43	STAND AND SITE DATA		Overall Fire Potential	MEDIUM
6-10	4.6 1.03	Age of overstory dominants:	225 yrs		
10-20	1.3 0.29	PICEA			
20+	0 0	ABLA	130 yrs		
SUBTOTAL 3+	12.3 2.75				
TOTAL	18.6 4.17	Average slope:	40 %		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Aspect:	northwest		
		Elevation:	6440 ft 1963 m	Photo taken:	6/23/77
		Remarks:		By:	W. C. Fischer
					Fire Ecology Group Nine
G	10				



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **MONTANA HABITAT TYPE:** NO. 624

Engelmann spruce - subalpine fir

Subalpine fir/queencup beadly-beargrass (ABA/CLIN-XETE)

DOWN 8 DEAD WOODY FUJI LOADINGS

DOWN & DEAD WOODY FUEL LOADINGS			
Size Class (Inches)	T/ac	Weight kg/m ²	
0.0-25		0.7	0.16
0.25-1		1.3	0.29
1.3		3.1	0.69
Subtotal	0.3	5.1	1.14

17

414

Average duff depth:	<u>1.5</u>	
	<u>3.81</u>	
Average diameter, 3+ fuels:	<u>5.8</u>	
	<u>14.73</u>	
Percent rotten, 3+ fuels:	<u>1</u>	
Volume of sound 3+ fuels:	<u>1198</u>	

83.

STAND AND SITE DATA	
Age of overstory dominants: LAOC	287 yrs
PSME	81 yrs
PICO	75 yrs
ABLA	75 yrs
Average slope:	17 %
Aspect:	east
Elevation:	5350 ft
	1631 m

Overall Fire Potential	Low
STAND LOCATION	
National Forest:	Lolo _____
Ranger District:	Ninemile _____
Drainage:	Bear Cr. _____
Photo taken:	9/23/76 _____

STAND LOCATIONS

National Forest: _____ Lolo

Ranger District: Ninemile

Drainage: _____ Bear Cr.

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11005 (continued)

Fire Ecology Group Nine

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DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	21A
MONTANA HABITAT TYPE: NO.	670		Engelmann spruce - subalpine fir Subalpine fir/menziesia (ABLA/MEEF)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth: in cm	Based on an average bad day: 85.9° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.2	0.04	Average diameter, 3+ fuels: 4.5 in cm	Rate of Spread: low	
0.25-1	0.9	0.20	11.43 Percent rotten, 3+ fuels: 41 %	Intensity: low	
1-3	1.9	0.43	Volume of sound 3+ fuels: 812 ft ³ /ac 56.8 m ³ /ha	Torching: nil	
Subtotal		0.3	0.67	Crowning: nil	
				Resistance to control: low	
STAND AND SITE DATA		Overall Fire Potential		LOW	
3-6	9.7	2.17			
6-10	7.5	1.68			
10-20	0	0			
20+	0	0			
SUBTOTAL 3+	17.2	3.85			
TOTAL	20.2	4.52			
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Average slope: 8 %		
			Aspect: northwest		
			Elevation: 6,160 ft	1878 m	
			Photo taken:	7/21/78	
			By:	W. C. Fischer	
			Remarks:	Fire Ecology Group Nine	
H/G	8/10				



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **MONTANA HABITAT TYPE: NO.** 661

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA				FIRE POTENTIAL RATING			
Size Class (inches)	Weight T/ac	Weight kg/m ²	Average duff depth:	2.1 5.33	in cm	Rate of Spread:	medium	Based on an average bad day: 85 90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	Intensity:	medium	Intensity:
0.0-0.25	0.5	0.11	Average diameter, 3+ fuels:	5.4 13.72	in cm	Torching:	low		Crowning:	nil	
0.25-1	2.2	0.49	Percent rotten, 3+ fuels:	1 %	%	Resistance to control:	medium				
1.3	4.3	0.96	Volume of sound 3+ fuels:	1159 81.1	ft ³ /ac m ³ /ha	Overall Fire Potential	medium				
Subtotal				STAND AND SITE DATA				STAND LOCATION			
0.3	7.0	1.56				National Forest:	LoLo		Ranger District:	Missoula	
3.6	3.4	0.76				Drainage:	Howard Cr.				
6-10	0.4	0.09	Age of overstory dominants: LAOC:	120 yrs							
10-20	4.7	1.05	PSME	63 yrs							
20+	6.0	1.35	PICO	52 yrs							
SUBTOTAL											
3+	14.5	3.25									
TOTAL				Average slope:	52	%					
				Aspect:	northeast						
				Elevation:	4040 ft	m					
				Remarks:	old partial cut						
NFDRS FUEL MODEL				STYLIZED FUEL MODEL				Photo taken: 8/29/77			
								By: W. C. Fischer			
								Fire Ecology Group Nine			



DATA SHEET

		Stand No.	54
FOREST COVER TYPE: SAF NO.	206	Engelmann spruce - subalpine fir	
MONTANA HABITAT TYPE: NO.	670	Subalpine fir/menziesia (ABLA/MEEF)	
DOWN & DEAD WOODY FUEL LOADINGS			
Size Class (inches)	T/ac	Weight Kg/m ²	OTHER FUEL DATA
0-0.25	0.7	0.16	Average duff depth: 2.5 in 6.35 cm
0.25-1	2.7	0.61	Average diameter, 3+ fuels: 4.8 in 12.19 cm
1-3	4.1	0.92	Percent rotten, 3+ fuels: 53 %
Subtotal		7.5	Volume of sound 3+ fuels: 532 ft ³ /ac 37.2 m ³ /ha
STAND AND SITE DATA			Overall Fire Potential HIGH
3-6	6.8	1.52	
6-10	6.0	1.35	
10-20	1.5	0.34	Age of overstory dominants: PSME 295 yrs
20+	0	0	PICEA 110 yrs
SUBTOTAL 3+	14.3	3.21	PICO 89 yrs
TOTAL	21.8	4.90	Average slope: 50 %
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Aspect: northwest
			Elevation: 5900 ft 1798 m
			Photo taken: 7/6/77
			By: W. C. Fischer
			Remarks: Fire Ecology Group Nine
G		10	



DATA SHEET

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 670

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.6 6.60	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.025	0.4	0.09	Average diameter, 3+ fuels:	4.7	in cm	Rate of Spread:	low
0.25-1	2.0	0.45		11.94	cm	Intensity:	medium
1.3	2.9	0.65	Percent rotten, 3+ fuels:	66	%	Torching:	medium
			Volume of sound 3+ fuels:	459	m ³ /ac	Crowning:	medium
				32.1	m ³ /ha	Resistance to control:	medium
STAND AND SITE DATA				Overall Fire Potential	MEDIUM	STAND LOCATION	
Subtotal 0.3	5.3	1.19				National Forest:	Lolo
3.6	8.1	1.82				Ranger District:	Missoula
6.10	8.9	2.00	Age of overstory dominants: PIAL	190 yrs		Drainage:	Gilbert Cr.
10-20	0	0	ABLA	130 yrs			
20+	0	0					
SUBTOTAL 3+	17.0	3.82					
TOTAL	=	22.3	5.01	Average slope: 30 Aspect: northwest Elevation: 6620 ft 2018 m	%	Photo taken:	6/23/77
NFDRS FUEL MODEL	STYLIZED FUEL MODEL			Remarks:		By:	W. C. Fischer
							Fire Ecology Group Nine



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 **MONTANA HABITAT TYPE: NO.** 670

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING				
Size Class (inches)	T/ac	Weight Kg/m ²	Average duff depth:	1.9 in	4.83 cm	Rate of Spread:	low	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0-0.25	0.5	0.11	Average diameter, 3+ fuels:	5.2 cm	in	Intensity:	low			
0.25-1	1.8	0.40		13.21 cm		Torching:	low			
1-3	2.0	0.45	Percent rotten, 3+ fuels:	37 %	%	Crowning:	low			
<hr/>			Volume of sound 3+ fuels:	926 ft ³ /ac	m ³ /ha	Resistance to control:	low			
Subtotal										
0-3	4.3	0.96		64.8 m ³ /ha						
<hr/>			STAND AND SITE DATA			Overall Fire Potential	Low			
3-6	5.9	1.32	<hr/>							
6-10	9.4	2.11	<hr/>							
10-20	2.9	0.65	<hr/>							
20+	0	0	<hr/>							
SUBTOTAL			<hr/>							
3+	18.2	4.08	<hr/>							
TOTAL	22.5	5.04	<hr/>							
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		<hr/>							
<hr/>			<hr/>							
Remarks:			<hr/>							
Fire Ecology Group Nine			<hr/>							
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By: _____			<hr/>							
W. C. Fischer			<hr/>							
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Photo taken: _____			<hr/>							
7/21/78			<hr/>							
<hr/>			<hr/>							
Ranger District: _____			<hr/>							
Helena _____			<hr/>							
<hr/>			<hr/>							
Drainage: _____			<hr/>							
<hr/>			<hr/>							
Cooper Cr. _____			<hr/>							
<hr/>			<hr/>							
National Forest: _____			<hr/>							
Lincoln _____			<hr/>							
<hr/>			<hr/>							
Age of overstory dominants:			<hr/>							
ABLA 184 yrs			<hr/>							
<hr/>			<hr/>							
PIAL 144 yrs			<hr/>							
<hr/>			<hr/>							
PICEA 115 yrs			<hr/>							
<hr/>			<hr/>							
PICO 115 yrs			<hr/>							
<hr/>			<hr/>							
Average slope: 5 %			<hr/>							
Aspect: Northwest			<hr/>							
Elevation: 6,020 ft			<hr/>							
1835 m			<hr/>							
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Remarks:			<hr/>							
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Fire Ecology Group Nine			<hr/>							
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By: _____			<hr/>							
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Photo taken: _____			<hr/>							
7/21/78			<hr/>							
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Ranger District: _____			<hr/>							
Helena _____			<hr/>							
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Drainage: _____			<hr/>							
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Cooper Cr. _____			<hr/>							
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National Forest: _____			<hr/>							
Lincoln _____			<hr/>							
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Age of overstory dominants:			<hr/>							
ABLA 184 yrs			<hr/>							
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PIAL 144 yrs			<hr/>							
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PICEA 115 yrs			<hr/>							
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PICO 115 yrs			<hr/>							
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Average slope: 5 %			<hr/>							
Aspect: Northwest			<hr/>							
Elevation: 6,020 ft			<hr/>							
1835 m			<hr/>							
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Remarks:			<hr/>							
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Fire Ecology Group Nine			<hr/>							
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W. C. Fischer			<hr/>							
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Photo taken: _____			<hr/>							
7/21/78			<hr/>							
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Ranger District: _____			<hr/>							
Helena _____			<hr/>							
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Drainage: _____			<hr/>							
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Cooper Cr. _____			<hr/>							
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National Forest: _____			<hr/>							
Lincoln _____			<hr/>							
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Age of overstory dominants:			<hr/>							
ABLA 184 yrs			<hr/>							
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PIAL 144 yrs			<hr/>							
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PICEA 115 yrs			<hr/>							
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PICO 115 yrs			<hr/>							
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Average slope: 5 %			<hr/>							
Aspect: Northwest			<hr/>							
Elevation: 6,020 ft			<hr/>							
1835 m			<hr/>							
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Remarks:			<hr/>							
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Fire Ecology Group Nine			<hr/>							
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W. C. Fischer			<hr/>							
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Photo taken: _____			<hr/>							
7/21/78			<hr/>							
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Ranger District: _____			<hr/>							
Helena _____			<hr/>							
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Drainage: _____			<hr/>							
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Cooper Cr. _____			<hr/>							
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National Forest: _____			<hr/>							
Lincoln _____			<hr/>							
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Age of overstory dominants:			<hr/>							
ABLA 184 yrs			<hr/>							
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PIAL 144 yrs			<hr/>							
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PICEA 115 yrs			<hr/>							
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DATA SHEET

FOREST COVER TYPE: SAE NO 206

MONTANA HABITAT TYPE: NO. 670

DOWN & DEAD WOODY FUEL LOADINGS			
Size Class (Inches)	Weight T/ac	Weight <i>Kg/m³</i>	
0.0-25	0.7	0.16	
0.25-1	2.8	0.63	
1-3	1.6	0.36	
			Subtotal
	0.3	5.1	

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (Inches)	Weight T/ac	Weight Kg/m^2
0.025	0.7	0.16
0.25-1	2.8	0.63
1-3	1.6	0.36
Subtotal	5.1	1.15
0.3		

STAND AND SITE DATA

STAND AND SITE DATA			
6-10	9.5	2.13	Age of overstory dominants:
10-20	7.8	1.75	PSME
20+	0	0	ABLA
SUBTOTAL	3+	19.3	153 yrs 120 yrs

STAND LOCATION

STATION AND LOCATION

National Forest: Lolo
Ranger District: Missoula
Residence: Custer County, C-

TOTAL	24.4	5.48	Average slope: <u>60</u> %
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect: <u>northeast</u>
	Elevation: <u>5790</u> ft	<u>1765</u> m	Photo taken: <u>6/24/77</u>
G	10		By: <u>W. C. Fischer</u>
			Remarks: <u>Fire Ecology Group Nine</u>

A CHILLI.	Stand No.	50
Engelmann spruce - subalpine fir		
Subalpine fir/menziesia (ABLA/MEFE)		

Stand No. 50

Engelmann spruce = subhalpine fir

Subalpine fir/menziesia (ABIA/MEEF)

FIRE POTENTIAL RATING	
Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
Rate of Spread:	medium
Intensity:	medium
Torching:	medium
Crowning:	LOW
Resistance to control:	medium
Overall Fire Potential	MEDIUM
STAND LOCATION	
National Forest:	Lolo
Ranger District:	Missoula
Drainage:	Gilbert Cr.
Photo taken:	6/24/77
By:	W. C. Fischer

97



DATA SHEET

58

FOREST COVER TYPE: SAF NO. 206

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Engelmann spruce - subalpine fir

MONTANA HABITAT TYPE: NO. 670

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Subalpine fir/menziesia (ABLA/MFE)

DOWN & DEAD WOODY FUEL LOADINGS

Size Class (Inches)	Weight T/ac Kg/m ²
0-0.25	0.3 0.07
0.25-1	1.2 0.27
1-3	2.1 0.47
Subtotal	3.6 0.81
3-6	2.0 0.45
6-10	10.8 2.42
10-20	9.0 2.02
20+	1.9 0.43
SUBTOTAL 3+	23.7 5.32
TOTAL	27.3 6.13

OTHER FUEL DATA

Average duff depth:	1.6 in 4.06 cm
Average diameter, 3+ fuels:	7.2 in 18.29 cm
Percent rotten, 3+ fuels:	33 %
Volume of sound 3+ fuels:	1280 ft ³ /ac 89.6 m ³ /ha

FIRE POTENTIAL RATING

Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
Rate of Spread:	low
Intensity:	medium
Torching:	medium
Crowning:	low
Resistance to control:	medium

STAND AND SITE DATA

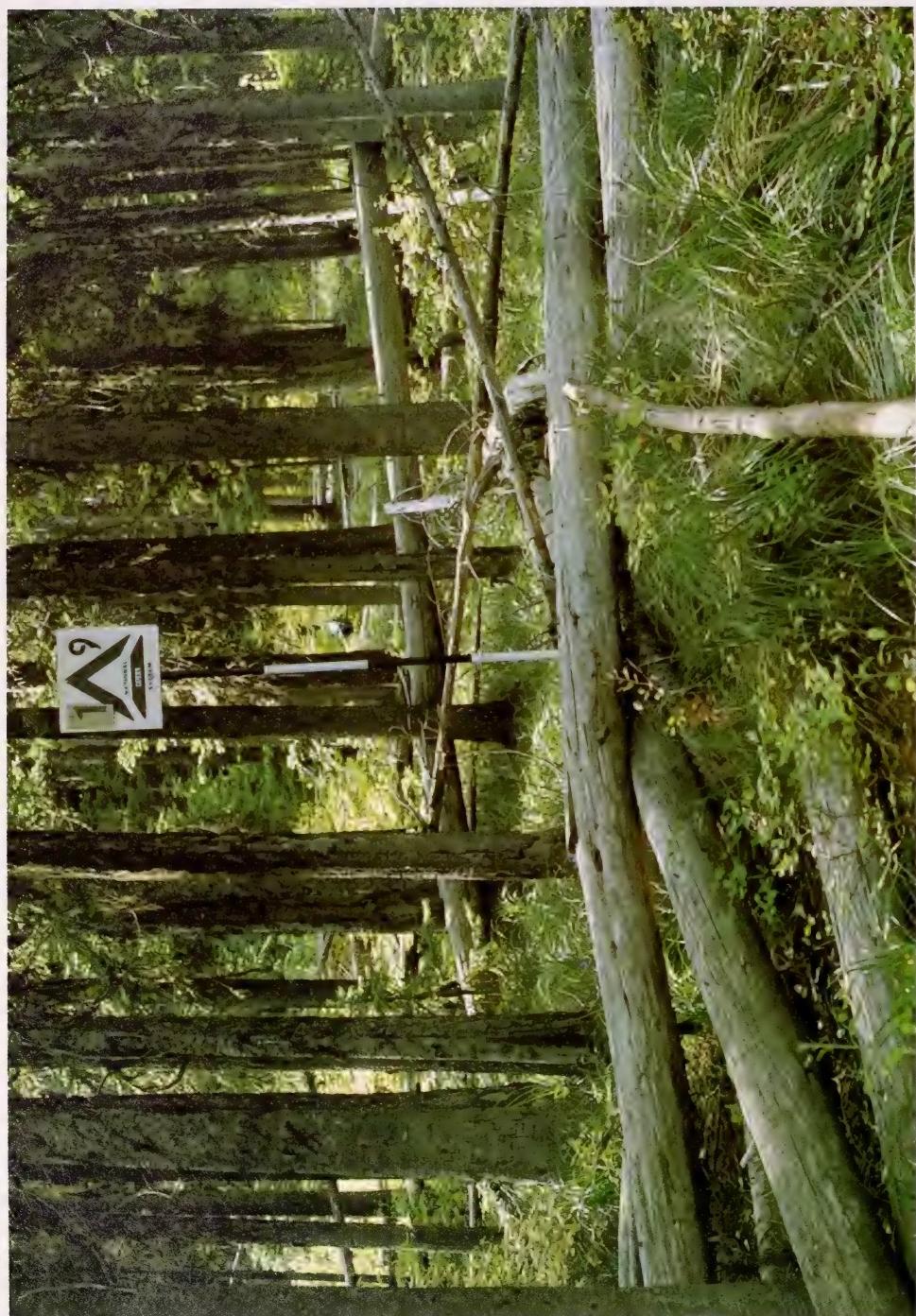
Age of overstory dominants: ABLA	132 yrs
PICEA	121 yrs
PICO	103 yrs
NFDRS FUEL MODEL	STYLIZED FUEL MODEL
Remarks:	Fire Ecology Group Nine

STAND LOCATION

National Forest:	Lolo
Ranger District:	Missoula
Drainage:	Wrangle Cr.
Photo taken:	7/13/77
By:	W. C. Fischer

10

G



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	19
MONTANA HABITAT TYPE: NO.	670	Engelmann spruce - subalpine fir	
		Subalpine fir/menziesia (ABLA/MEFE)	

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA	FIRE POTENTIAL RATING
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 1.2 in 3.05 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mild wind, 4 weeks since rain
0.0-25	0.3	0.07	Average diameter, 3+ fuels: 5.1 in	Rate of Spread: medium
0.25-1	0.9	0.20	12.95 cm	Intensity: medium
1-3	2.9	0.65	Percent rotten, 3+ fuels: 9 %	Torching: medium
			Volume of sound 3+ fuels: 1731 ft ³ /ac 121.1 m ³ /ha	Crowning: medium
Subtotal				Resistance to control: medium
0-3	4.1	0.92		
3-6	7.7	1.73		
6-10	14.6	3.27		
10-20	1.6	0.36	AGE OF OVERSTORY DOMINANTS: ABLA 120 yrs	STAND LOCATION
20+	0	0	PICO 117 yrs	National Forest: Lolo
SUBTOTAL			PICEA 100 yrs	Ranger District: Nine mile
3+	23.9	5.36		Drainage: Bear Cr.
TOTAL	28.0	6.28		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Average slope: 10 %	
G	10		Aspect: northeast	Photo taken: 9/22/76
			Elevation: 5750 ft 1753 m	By: W. C. Fischer
			Remarks: Fire Ecology Group Nine	



DATA SHEET

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 625



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	96
MONTANA HABITAT TYPE: NO.	670		Engelmann spruce - subalpine fir Subalpine fir/menziesia (ABLA/MFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight <i>kg/m²</i>	Average duff depth:	2.8 in		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mild wind, 4 weeks since rain		
0.0-25	0.7	0.16	Average diameter, 3+ fuels:	6.4 cm		Rate of Spread:	medium	
0.25-1	1.6	0.36		16.26 cm		Intensity:	medium	
1-3	1.8	0.40	Percent rotten, 3+ fuels:	54 %		Torching:	medium	
			Volume of sound 3+ fuels:	1078 ft ³ /ac		Crowning:	medium	
Subtotal				75.4 m ³ /ha		Resistance to control:	medium	
0.3	4.1	0.92						
3-6	4.4	0.99	STAND AND SITE DATA			Overall Fire Potential	MEDIUM	
6-10	17.2	3.86	Age of overstory dominants:	250 yrs		STAND LOCATION		
10-20	7.8	1.75	PSME			National Forest:	LoLo	
20+	0	0	PICO	190 yrs		Ranger District:	Missoula	
SUBTOTAL			PICEA	143 yrs		Drainage:	Gillispie Cr.	
3+	29.4	6.60	ABLA	112 yrs		Remarks:		
TOTAL	33.5	7.52	Average slope:	17 northwest	%			
			Aspect:	5300 ft	m	Photo taken:	6/13/78	
			Elevation:	1615	m	By:	W. C. Fischer	
MFDRS FUEL MODEL	STYLIZED FUEL MODEL							
G	10							
	Fire Ecology Group Nine							



DATA SHEET

FOREST COVER TYPE: SAF NO. 206, Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO. 691, Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight kg/m^2	Average duff depth:	3.1 in 7.87 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0-0.25	0.6	0.13	Average diameter, 3+ fuels:	4.8 in 12.19 cm	Rate of Spread: high
0.25-1	1.9	0.43	Percent rotten, 3+ fuels:	2.3 %	Intensity: medium
1-3	3.2	0.72	Volume of sound 3+ fuels:	1735 ft ³ /ac 121.3 m ³ /ha	Torching: medium
Subtotal	5.7	1.28			Crowning: medium
0-3					Resistance to control: high
3-6	11.7	2.62	STAND AND SITE DATA		Overall Fire Potential HIGH
6-10	16.3	3.65	Age of overstory dominants:		
10-20	0	0	ABLA	150 yrs	
20+	0	0	PSME	140 yrs	
SUBTOTAL 3+	28.0	6.27	PICEA	130 yrs	National Forest: Helena
TOTAL	33.7	7.55	PICO	115 yrs	Ranger District: Lincoln
MFDRS FUEL MODEL		STYLIZED FUEL MODEL		Average slope: 6 %	Drainage: Cooper Cr.
Aspect: northwest		Elevation: 5890 ft 1795 m		Photo taken: 7/21/78	By: W. C. Fischer
Remarks: Fire Ecology Group Eight					
G	10				



DATA SHEET

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 670

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²	Average duff depth:	3.9 in cm	Average diameter, 3+ fuels:	7.8 in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0.25	0.7	0.16					Rate of Spread: medium
0.25-1	2.3	0.52					Intensity: medium
1-3	6.0	1.35					Torching: medium
			Percent rotten, 3+ fuels:	84 %			Crowning: medium
			Volume of sound 3+ fuels:	367 ft ³ /ac 25.7 m ³ /ha			Resistance to control: medium
Subtotal							Overall Fire Potential MEDIUM
0.3	9.0	2.03					
3.6	2.6	0.58	STAND AND SITE DATA				
6-10	7.8	1.75	Age of overstory dominants:	357 yrs	STAND LOCATION		
10-20	18.9	4.24	PSME		National Forest:	Lolo	
20+	0	0	ABLA	65 yrs	Ranger District:	Missoula	
SUBTOTAL 3+	29.3	6.57	PICEA	55 yrs	Drainage:	Gilbert Cr.	
TOTAL	38.3	8.60					
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Remarks: _____				
G			Fire Ecology Group Nine				
10			Photo taken: 6/24/77				
			By: W. C. Fischer				





DATA SHEET

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 625

Stand No. 20

Engelmann spruce - subalpine fir
 Subalpine fir/queencup beadily-menziecia (ABLA/CLUN-MEFE)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth:	3.4 in 8.64 cm	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mih wind, 4 weeks since rain		
0.025	0.7	0.16	Average diameter, 3+ fuels:	6.9 cm	in	Rate of Spread:	low	
0.25-1	1.6	0.36		17.53 cm	cm	Intensity:	medium	
1-3	3.5	0.78	Percent rotten, 3+ fuels:	6 %	%	Torching:	medium	
			Volume of sound 3+ fuels:	2556 ft ³ /ac 178.8 m ³ /ha	ft ³ /ac m ³ /ha	Crowning:	low	
Subtotal	5.8	1.30				Resistance to control:	medium	
3-6	4.6	1.03	STAND AND SITE DATA			Overall Fire Potential	MEDIUM	
6-10	6.0	1.35	Age of overstory dominants:			STAND LOCATION		
10-20	23.5	5.27	LAOC	110 yrs		National Forest:	Lolo	
20+	0	0	PICEA	92 yrs		Ranger District:	Ninemile	
SUBTOTAL 3+	34.1	7.65	ABLA	60 yrs		Drainage:	Bear Cr.	
TOTAL	39.9	8.95				Remarks:		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Average slope:	10 %				
			Aspect:	east				
			Elevation:	5,370 ft	1,637 m	Photo taken:	9/23/76	
G	10					By:	W. C. Fischer	
						Fire Ecology Group Nine		



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO.	691	Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight kg/m ²	Average duff depth:	1.3 in 3.30 cm	in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.0-25	0.4	0.09	Average diameter, 3+ fuels:	5.6 in	in	Rate of Spread:	low	
0.25-1	1.4	0.31		14.22 cm	cm	Intensity:	medium	
1-3	2.1	0.47	Percent rotten, 3+ fuels:	12 %	%	Torching:	medium	
			Volume of sound 3+ fuels:	2596 ft ³ /ac 181.6 m ³ /ha		Crowning:	low	
Subtotal						Resistance to control:	high	
0.3	3.9	0.87						
36	9.4	2.11	STAND AND SITE DATA			Overall Fire Potential	MEDIUM	
6-10	24.7	5.54	Age of overstory dominants:	120 yrs		STAND LOCATION		
10-20	2.8	0.63	ABLA			National Forest:	LoLo	
20+	0	0	PSME	118 yrs		Ranger District:	Missoula	
						Drainage:	Wrangle Cr.	
SUBTOTAL								
3+	36.9	8.28						
TOTAL	40.8	9.15	Average slope:	24 southeast	%			
			Aspect:	5620 ft	m	Photo taken:	7/13/77	
NEDRS FUEL MODEL	STYLIZED FUEL MODEL		Elevation:	1713 m		By:	W. C. Fischer	
C	10					Remarks:		
	Fire Ecology Group Eight							



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	,	Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO.	440	,	Spruce/sweet-scented bedstraw (PICEA/GA/TR)

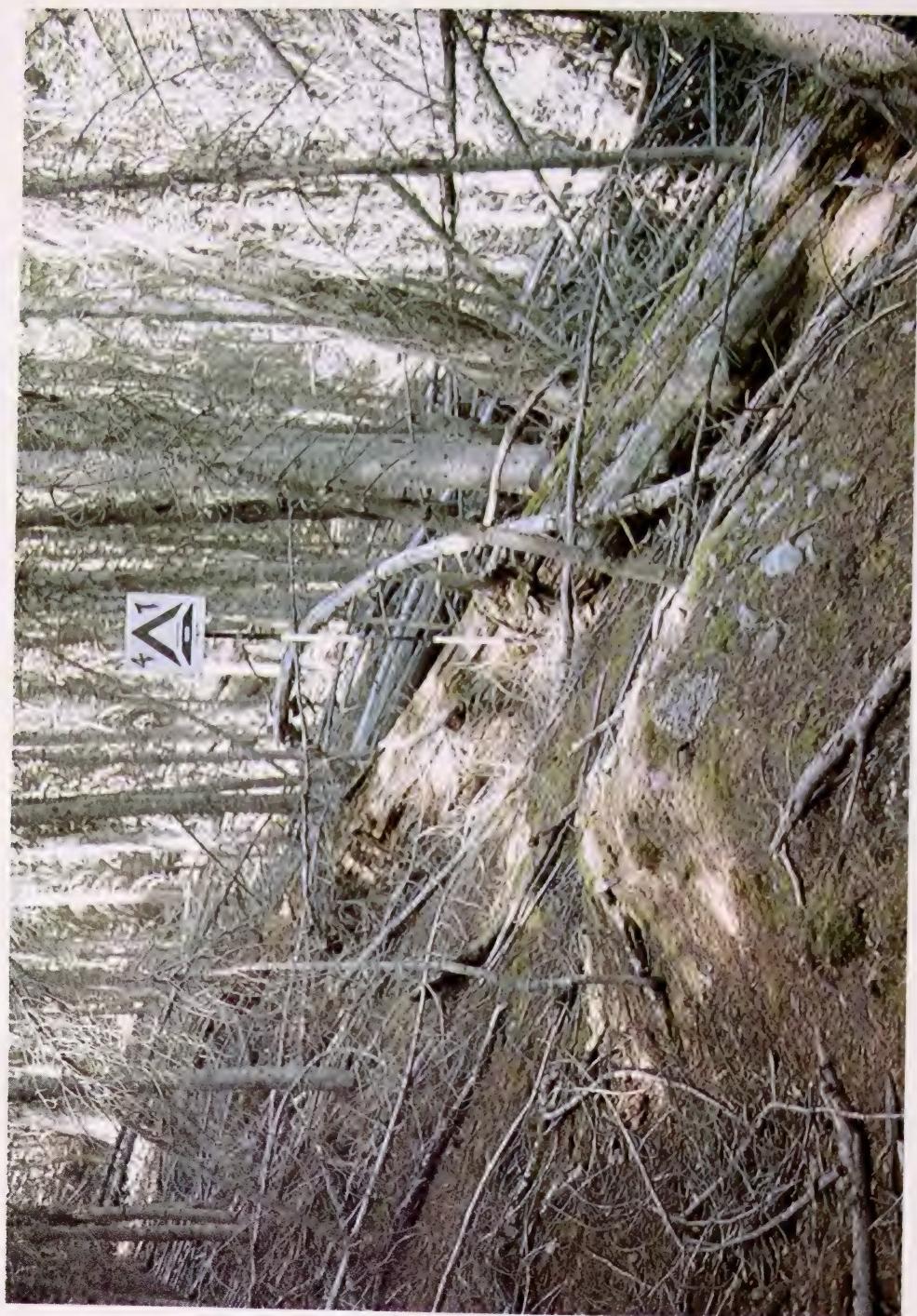
DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA	FIRE POTENTIAL RATING
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth: 4.9 in 12.45 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain
0-0.25	0.4	0.09	Average diameter, 3+ fuels: 7.5 in	Rate of Spread: high
0.25-1	1.8	0.40	19.05 cm	Intensity: medium
1-3	4.1	0.92	Percent rotten, 3+ fuels: 50 %	Torching: low
			Volume of sound 3+ fuels: 1476 ft ³ /ac 103.5 m ³ /ha	Crowning: medium
Subtotal				Resistance to control: medium
0-3	6.3	1.41		
3-6	3.0	0.67		
6-10	5.5	1.23		
10-20	28.7	6.43		
20+	0	0		
SUMMARY				
SUBTOTAL	37.2	8.33		
TOTAL	43.5	9.74	Average slope: 7 % Aspect: northwest Elevation: 6270 ft 1911 m	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL			
G	10		Photo taken: 8/15/78	By: W. C. Fischer
			Remarks:	Fire Ecology Group Nine



DATA SHEET

FOREST COVER TYPE: SAF NO. _____ 206
MONTANA HABITAT TYPE: NO. 670

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²		Average duff depth:	2.3 in 5.84 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	0.7	0.16	Average diameter, 3+ fuels:	7.7 in 19.56 cm	Rate of Spread: low	Intensity: low	Torching: low
0.25-1	1.5	0.34	Percent rotten, 3+ fuels:	42 %	Crowning: low	Resistance to control: low	Crowing: low
1-3	2.3	0.52	Volume of sound 3+ fuels:	1885 ft ³ /ac 131.9 m ³ /ha	Overall Fire Potential	LOW	
Subtotal				STAND AND SITE DATA		STAND LOCATION	
0.3	4.5	1.02				National Forest: Lolo	Ranger District: Missoula
3-6	3.8	0.85				Drainage: Gillispie Cr.	By: W. C. Fischer
6-10	14.3	3.21	Age of overstory dominants: PSME	177 yrs			
10-20	22.7	5.09	PICO	130 yrs			
20+	0	0	PICEA	110 yrs			
SUBTOTAL 3+	40.8	9.15					
TOTAL	45.3	10.17	Average slope: 19 Aspect: northwest Elevation: 5000 ft 1524 m	%		Photo taken: 6/13/78	
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Remarks:			By: W. C. Fischer	
G	Fire Ecology Group Nine		10				



DATA SHEET

Stand No. 47

Engelmann spruce = subalpine fir

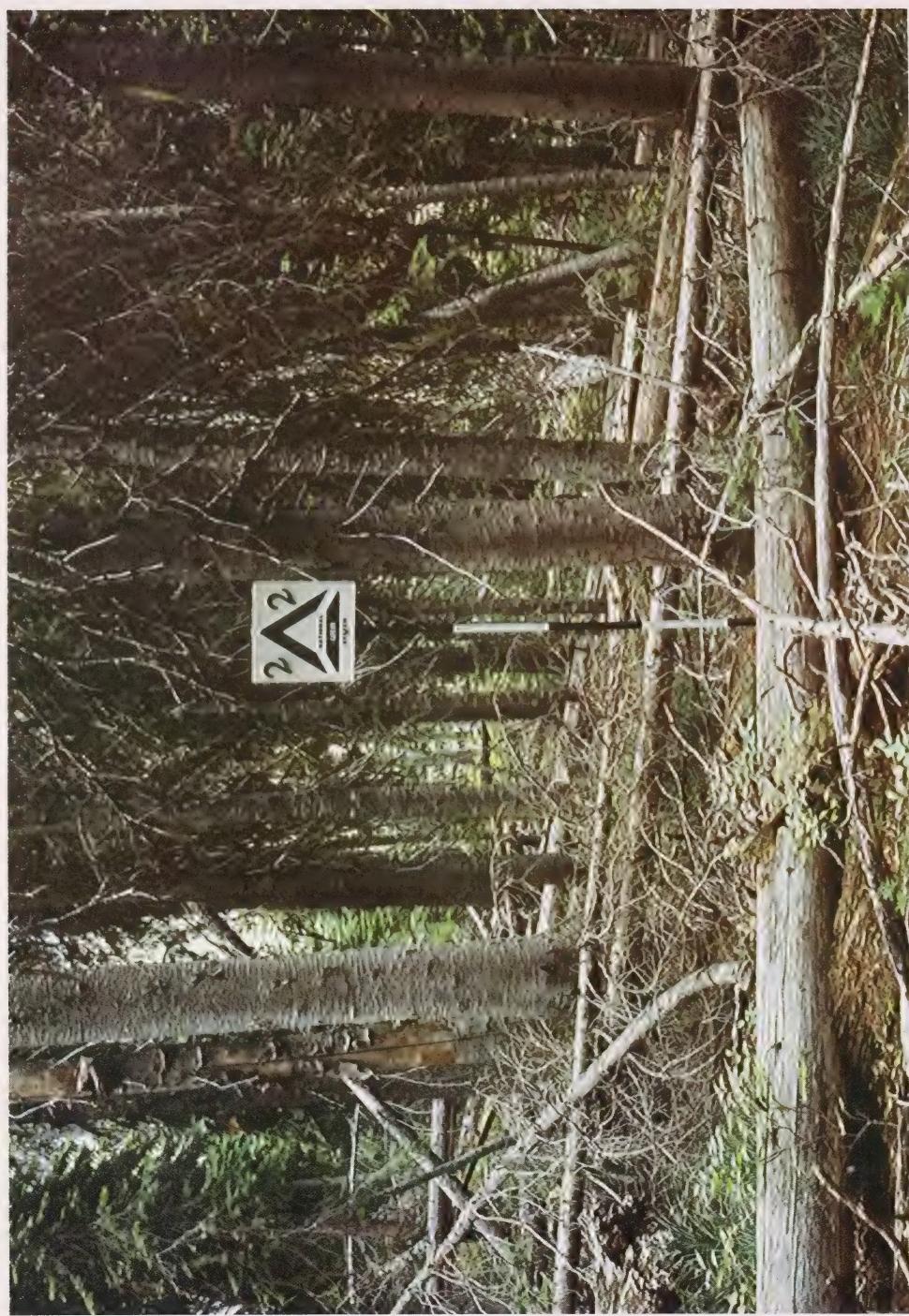
MONTANA HISTORICAL SOCIETY

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²		Average duff depth:	2.6 in 6.60 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.8	0.18		Average diameter, 3+ fuels:	7.0 in 17.78 cm	Rate of Spread: high	
0.25-1	2.6	0.58		Percent rotten, 3+ fuels:	90 %	Intensity: high	
1-3	6.8	1.52		Volume of sound 3+ fuels:	301 ft ³ /ac 21.1 m ³ /ha	Torching: medium	
Subtotal		10.2	2.28	Crowning:		Resistance to control: medium	
				STAND AND SITE DATA		Overall Fire Potential	HIGH
3-6	4.6	1.03					
6-10	4.3	0.96		Age of overstory dominants:			
10-20	27.6	6.19		B SME	350 yrs		
20+	0	0		ABA	78 yrs	National Forest:	Lolo
SUBTOTAL		36.5	8.18	PICO	60 yrs	Ranger District:	Missoula
TOTAL		46.7	10.46			Drainage:	Gilbert Cr.
NFDRS FUEL MODEL		STYLIZED FUEL MODEL				Remarks:	
						Photo taken:	6/24/77
						By:	W. C. Fischer
						Fire Ecology Group Nine	



DATA SHEET

FOREST COVER TYPE: SAF NO.	MONTANA HABITAT TYPE: NO.	Stand No.	4
206	670	Engelmann spruce - subalpine fir	Subalpine fir/menzesia (ABIA/MEFE)



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 , **MONTANA HABITAT TYPE: NO.** 691 , **Stand No.** 22

Engelmann spruce - subalpine fir
Subalpine fir/beargrass-blue huckleberry (ABLA/XETE-VAGL)

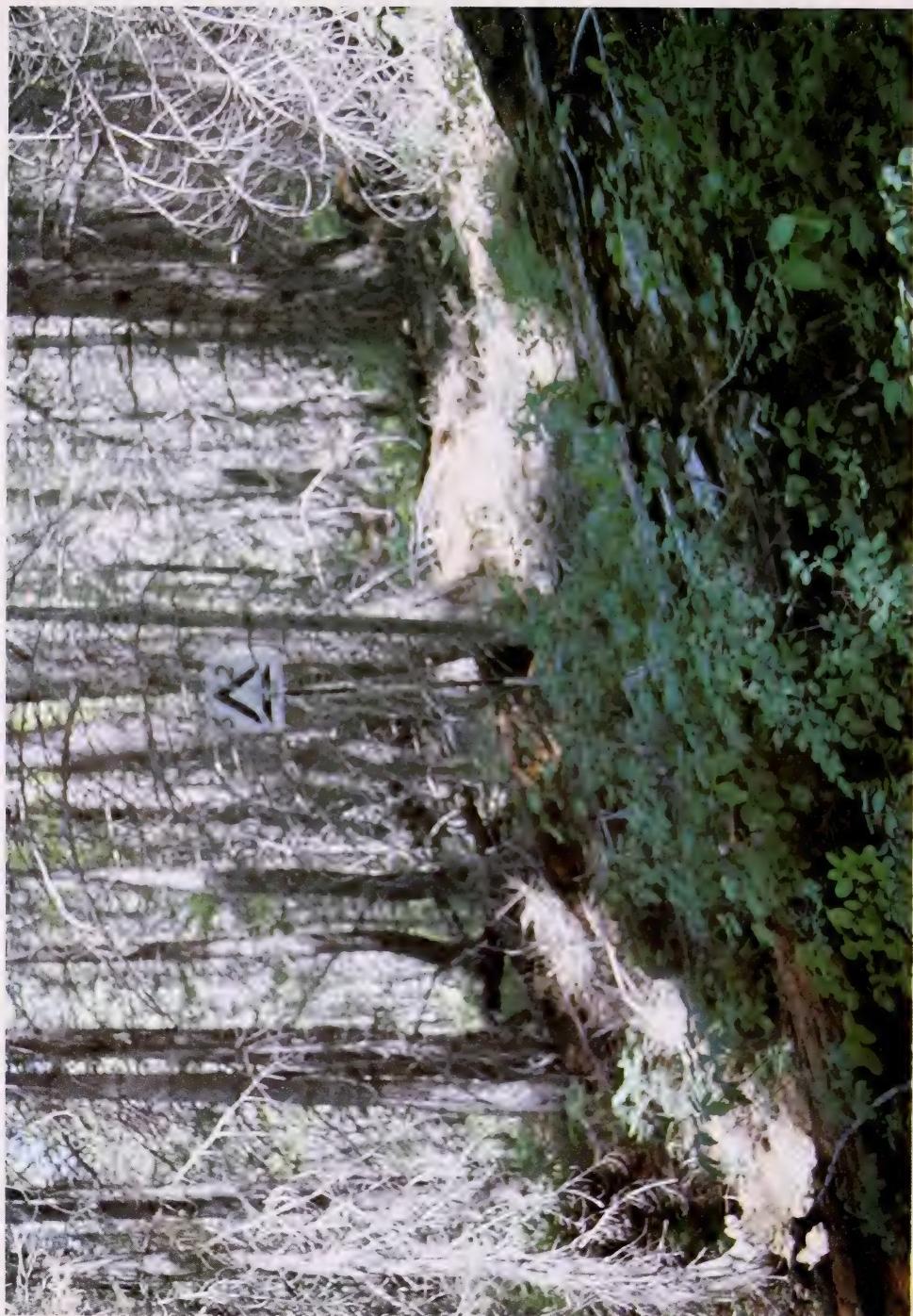
DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	T/ac	Weight Kg/m ²	Average duff depth:	1.7 in		Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.025	0.6	0.13	Average diameter, 3+ fuels:	7.1 cm		Rate of Spread: medium		
0.25-1	1.7	0.38		18.03 cm		Intensity: high		
1-3	2.4	0.54	Percent rotten, 3+ fuels:	57 %		Torching: high		
			Volume of sound 3+ fuels:	1477 ft ³ /ac		Crowning: medium		
				103.4 m ³ /ha		Resistance to control: high		
Subtotal						Overall Fire Potential HIGH		
3.6	4.1	0.92	STAND AND SITE DATA					
6-10	25.6	5.74	Age of overstory dominants:	174 yrs				
10-20	13.6	3.05	ABLA			STAND LOCATION		
20+	0	0				National Forest: Lolo		
SUBTOTAL						Ranger District: Ninemile		
3+	43.3	9.71				Drainage: Sixmile Cr.		
TOTAL	48.0	10.76	Average slope:	20 %				
			Aspect:	east				
			Elevation:	6100 ft	1859 m	Photo taken:	9/23/76	
						By:	W. C. Fischer	
						Remarks:		
						Fire Ecology Group Eight		
WFDRS FUEL MODEL	STYLIZED FUEL MODEL		G	10				



DATA SHEET

FORREST COVER TYPE: SAF NO. 206 **MONTANA HABITAT TYPE: NO** 670

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²		Average duff depth:	3.2 in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.5	0.11	Average diameter, 3+ fuels:	8.13 in cm	6.6 in cm	Rate of Spread: medium	
0.25-1	2.7	0.61		16.76 in cm	16.76 in cm	Intensity: medium	
1.3	4.1	0.92	Percent rotten, 3+ fuels:	33 %	33 %	Torching: medium	
Subtotal				Crowning: low			
0.3	7.3	1.64	Volume of sound 3+ fuels:	2250 ft ³ /ac 157.4 m ³ /ha	2250 ft ³ /ac 157.4 m ³ /ha	Resistance to control: medium	
STAND AND SITE DATA				Overall Fire Potential		MEDIUM	
3.6	5.8	1.30					
6.10	18.6	4.17	Age of overstory dominants:	PSME 210 yrs	STAND LOCATION		
10-20	14.7	3.30		ABLA 130 yrs	National Forest: Lolo		
20+	2.9	0.65			Ranger District: Missoula		
SUBTOTAL					Drainage: Gilbert Cr.		
3+	42.0	9.42					
TOTAL	49.3	11.06	Average slope: 70 Aspect: northeast	%			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Elevation: 5750 ft	1753 m	Photo taken: 7/6/77		
Remarks: _____					By: W. C. Fischer		
Fire Ecology Group Eight							



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	62
MONTANA HABITAT TYPE: NO.	630		

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	T/ac	Weight kg/m^2	Average duff depth: in cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.7	0.16	Average diameter, 3+ fuels: 10.1 in cm	Rate of Spread:	medium
0.25-1	1.6	0.36	25.65 cm	Intensity:	medium
1-3	1.3	0.29	Percent rotten, 3+ fuels: 97 %	Torching:	medium
			Volume of sound 3+ fuels: 122 ft ³ /ac 8.5 m ³ /ha	Crowning:	medium
Subtotal	3.6	0.81		Resistance to control:	high
0.3					
3-6	1.3	0.29		Overall Fire Potential	MEDIUM
6-10	3.2	0.72			
10-20	6.7	1.50	Age of overstory dominants: PICEA 65 yrs	STAND LOCATION	
20+	35.8	8.03	PSME 60 yrs	National Forest:	Lolo
			LAOC 55 yrs	Ranger District:	Missoula
SUBTOTAL 3+	47.0	10.54	ABLA 44 yrs	Drainage:	Rattlesnake Cr.
TOTAL	50.6	11.35	Average slope: 30 % Aspect: southwest		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL	Elevation: 4630 ft	1411 m	Photo taken:	7/13/77
G	10			By:	W. C. Fischer
				Remarks:	Fire Ecology Group Nine



DATA SHEET

Stand No. 12

FOREST COVER TYPE: SAF NO. 206
MONTANA HABITAT TYPE: NO. 670

Engelmann spruce - subalpine fir
Subalpine fir/memziesia (ABA/MEFIE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac Kg/m ²	Average duff depth:	3.0 in 7.62 cm	Based on an average bad day: 85-90 ° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	2.2	Average diameter, 3+ fuels:	4.6 in	Rate of Spread:	high
0.25-1	4.3	Percent rotten, 3+ fuels:	11.68 cm	Intensity:	high
1-3	14.1	Volume of sound 3+ fuels:	32 %	Torching:	high
				Crowning:	medium
Subtotal				Resistance to control:	high
0.3	20.6				
3-6	16.2	STAND AND SITE DATA		Overall Fire Potential	HIGH
6-10	7.5	Age of overstory dominants:			
10-20	6.7	LAOC	75 yrs	STAND LOCATION	
20+	0	ABLA	75 yrs	National Forest:	LoLo
SUBTOTAL 3+	30.4	PICEA	65 yrs	Ranger District:	Missoula
TOTAL	51.0	Average slope:	40 %	Drainage:	Cloudburst Cr.
		Aspect:	north		
		Elevation:	5,600 ft	Photo taken:	9/21/76
		old thinning slash	1707 m	By:	W. C. Fischer
NFDRS FUEL MODEL	STYLIZED FUEL MODEL				
J	12				



DATA SHEET

FOREST COVER TYPE: SAF NO.	206	Stand No.	20A		
MONTANA HABITAT TYPE: NO.	691	Engelmann spruce - subalpine fir			
Subalpine fir/beargrass-blue huckleberry phase (ABLA/XETE-VAGL)					
DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (Inches)	Weight T/ac <i>Kg/m²</i>	Average duff depth:	3.4 in 8.64 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.5	0.11	Average diameter, 3+ fuels:	4.9 in 12.45 cm	Rate of Spread: high
0.25-1	1.4	0.31	Percent rotten, 3+ fuels:	37 %	Intensity: high
1-3	3.8	0.85	Volume of sound 3+ fuels:	2273 ft ³ /ac 159.0 m ³ /ha	Torching: high
Subtotal			Crowning:	medium	Resistance to control: high
0.3	5.7	1.27			
3-6	16.7	3.74	STAND AND SITE DATA		Overall Fire Potential HIGH
6-10	22.0	4.93	Age of overstory dominants:	PICEA	STAND LOCATION
10-20	6.6	1.48		165 yrs	National Forest: Helena
20+	0	0	PIAL	140 yrs	Ranger District: Lincoln
SUBTOTAL					Drainage: Cooper Cr.
3+	45.3	10.15			
TOTAL	51.0	11.42	Average slope: 7 %		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Aspect: northwest		
			Elevation: 6160 ft	1878 m	Photo taken: 7/21/78
					By: W. C. Fischer
G	10		Remarks: _____		
			Fire Ecology Group Eight		



DATA SHEET

FOREST COVER TYPE: SAF NO. 206 MONTANA HABITAT TYPE: NO. 601	Stand No. 94																																																																																																
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		Subalpine fir/twinflower-twinflower phase (ABLA/LIBO-LIBO)																																																																																															
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		Photo taken: <u>6/13/78</u> By: <u>W. C. Fischer</u>																																																																																															



DATA SHEET

FOREST COVER TYPE: SAF NO. _____ 206

MONTANA HABITAT TYPE: NO.

DOWN & DEAD WOODY FUEL LOADINGS				OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac	Weight Kg/m ²		Average duff depth:	2.7 in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0-0.25	1.1	0.25		Average diameter, 3+ fuels:	6.0 in cm	Rate of Spread:	medium
0.25-1	3.2	0.72			15.24 cm	Intensity:	medium
1-3	2.2	0.49		Percent rotten, 3+ fuels:	18 %	Torching:	medium
				Volume of sound 3+ fuels:	3499 ft ³ /ac 244.8 m ³ /ha	Crowning:	medium
Subtotal	6.5	1.46				Resistance to control:	medium
0-3							
3-6	12.5	2.80		STAND AND SITE DATA		Overall Fire Potential	MEDIUM
6-10	28.8	6.46		Age of overstory dominants:	90 yrs	STAND LOCATION	
10-20	11.7	2.62		PICEA	90 yrs	National Forest:	LoLo
20+	0	0		ABLA	80 yrs	Ranger District:	Missoula
SUBTOTAL	53.0	11.88				Drainage:	Cloudburst Cr.
3+							
TOTAL	59.5	13.34		Average slope:	15 %	Photo taken:	9/21/76
				Aspect:	northeast		
				Elevation:	5880 ft 1792 m		
						By:	W. C. Fischer
						Remarks:	Fire Ecology Group Nine

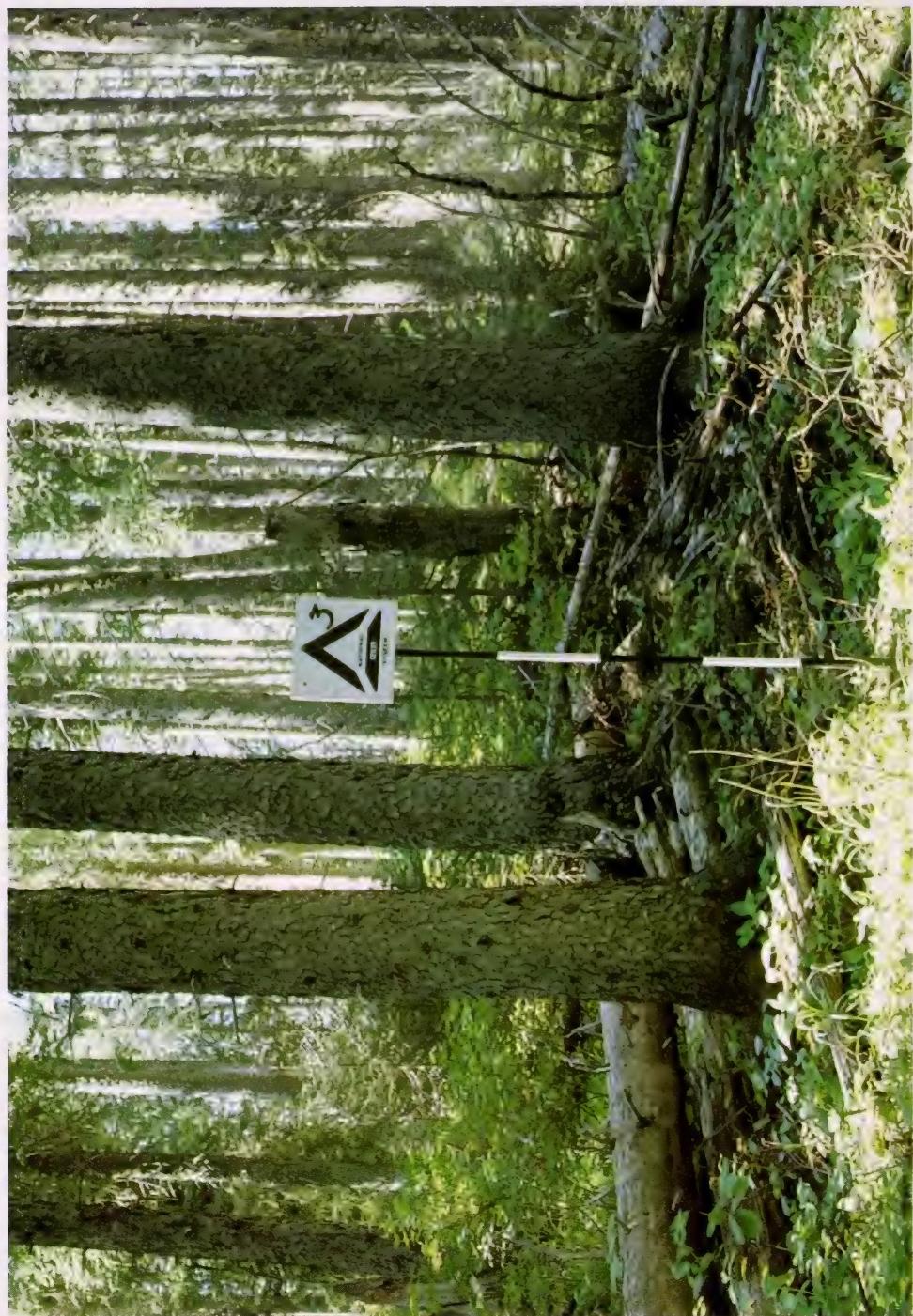


DATA SHEET

Stand No. 52

FOREST COVER TYPE: SAF NO.	206		Engelmann spruce - subalpine fir
MONTANA HABITAT TYPE: NO.	670		Subalpine fir/menziezia (ABLA/MEFE)

DOWN & DEAD WOODY FUEL LOADINGS		OTHER FUEL DATA		FIRE POTENTIAL RATING	
Size Class (inches)	Weight T/ac kg/m ²	Average duff depth:	2.9 in 7.37 cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	
0.0-25	0.5	Average diameter, 3+ fuels:	7.8 in 19.81 cm	Rate of Spread:	low
0.25-1	2.8	Percent rotten, 3+ fuels:	17 %	Intensity:	low
1-3	2.6	Volume of sound 3+ fuels:	3785 ft ³ /ac 264.8 m ³ /ha	Torching:	low
Subtotal		STAND AND SITE DATA		Crowning:	low
0.3	5.9	Age of overstory dominants:	175 yrs PICEA	Resistance to control:	low
3-6	4.5	ABLAs	140 yrs	Overall Fire Potential	LOW
6-10	16.3				
10-20	32.8				
20+	3.3				
SUBTOTAL 3+	56.9				
TOTAL	62.8	Average slope:	50 %		
NFDRS FUEL MODEL		Average aspect:	northeast		
		Elevation:	5860 ft 1786 m	Photo taken:	7/6/77
		Remarks:		By:	W. C. Fischer
G	10	Fire Ecology Group Nine			



DATA SHEET

EFOREST COVER TYPE: SAE NO

206

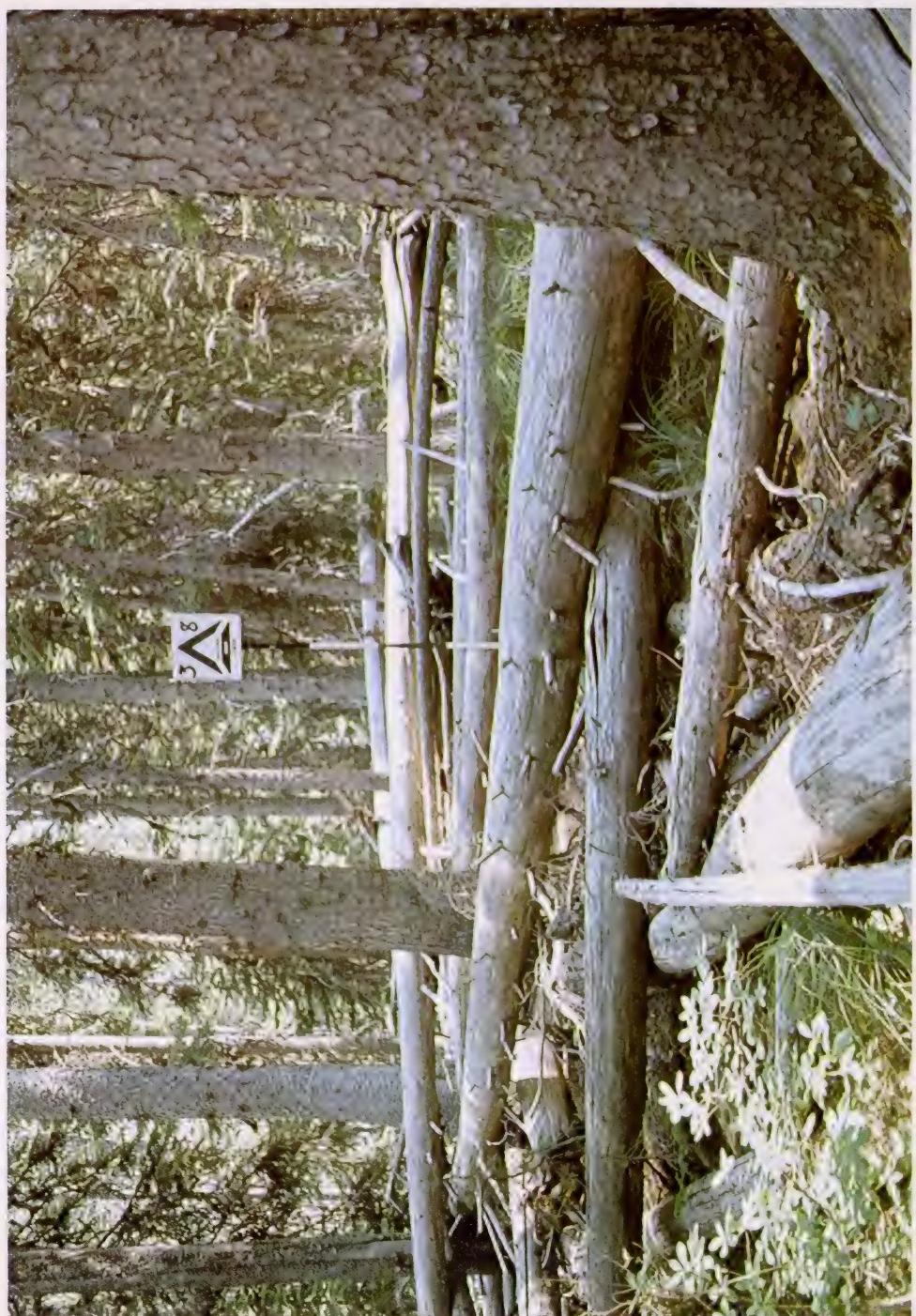
Engelmann spruce = subalpine fir

MONTANA HABITAT TYPE: NO.

625

Subalpine fir/queencup beadley-
m

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (inches)	Weight T/ac	Weight Kg/m ²	Average duff depth:	4.5 cm	in cm	Based on an average bad day: 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain	Rate of Spread:	LOW
0.0-0.25	0.4	0.09	Average diameter, 3+ fuels:	10.1	in cm	Intensity:	medium	
0.25-1	0.9	0.20		25.65	cm	Torching:	LOW	
1-3	0.5	0.11	Percent rotten, 3+ fuels:	49	%	Crowning:	LOW	
Subtotal			Volume of sound 3+ fuels:	2906	ft ³ /ac	Resistance to control:	LOW	
0.3	1.8	0.40		203.3	m ³ /ha			
3-6	2.7	0.61	STAND AND SITE DATA			Overall Fire Potential	LOW	
6-10	7.7	1.73	Age of overstory dominants:			STAND LOCATION		
10-20	57.1	12.80	PICEA	140	yrs	National Forest:	LoLo	
20+	3.3	0.74	ABLA	140	yrs	Ranger District:	Missoula	
SUBTOTAL 3+	70.8	15.88	PSME	117	yrs	Drainage:	Lost Park Cr.	
TOTAL	72.6	16.28	Average slope:	10	%			
NFDRS FUEL MODEL		STYLIZED FUEL MODEL	Aspect:	northeast		Photo taken:	9/15/76	
			Elevation:	4920	ft	By:	S. Cox	
			Remarks:					
			Fire Ecology Group Nine					



DATA SHEET

Stand No. 38

FOREST COVER TYPE: SAE NO 206

Engelmann spruce = subhalpine fir

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Subalpine fir/beargrass-blue bucklerberry phase (CARIA/YETE-VAGI)

DOWN & DEAD WOODY FUEL LOADINGS			OTHER FUEL DATA			FIRE POTENTIAL RATING		
Size Class (Inches)	Weight T/ac	Kg/m ²	Average duff depth:	2.9 in 7.37 cm	in cm	Based on an average bad day, 85-90° temp., 15-20% R.H., 10-15 mi/h wind, 4 weeks since rain		
0.0-25	0.2	0.04	Average diameter, 3+ fuels:	6.1 in 15.49 cm	in cm	Rate of Spread: medium	medium	
0.25-1	1.4	0.31	Percent rotten, 3+ fuels:	17 %	%	Intensity: high	high	
1.3	5.0	1.12	Volume of sound 3+ fuels:	4708 ft ³ /ac 329.4 m ³ /ha	ft ³ /ac m ³ /ha	Torching: medium	medium	
Subtotal			STAND AND SITE DATA			Overall Fire Potential		
0.3	6.6	1.47	Age of overstory dominants:	200 yrs PICEA	200 yrs	HIGH		
3.6	11.8	2.65	ABLA	170 yrs		STAND LOCATION		
6.10	47.1	10.56	PICO	117 yrs		National Forest: LoLo		
10.20	11.8	2.65				Ranger District: Missoula		
20+	0	0				Drainage: Gilbert Cr.		
SUBTOTAL 3+	70.7	15.86						
TOTAL	77.3	17.33	Average slope: 10 Aspect: east Elevation: 6380 ft	1945 m	%	Photo taken: 6/23/77		
NFDRS FUEL MODEL	STYLIZED FUEL MODEL		Remarks:			By: W. C. Fischer		
G	10		Fire Ecology Group Eight					

U. S. GOVERNMENT PRINTING OFFICE: 1981-9-781-749

Fischer, William C.
1981. Photo guide for appraising downed woody fuels in Montana
forests: lodgepole pine and Engelmann spruce - subalpine fir cover
types. USDA For. Serv. Gen. Tech. Rep. INT-98, 143 p. Intermt. For. and
Range Exp. Stn., Ogden, Utah 84401.

Two series of color photographs show different levels of downed
woody material resulting from natural processes in two forest cover
types in Montana. Each photo is supplemented by fuel inventory
data and potential fire behavior ratings.

KEYWORDS: forest fuels, fire behavior, fire hazard, fuel appraisal

The Intermountain Station, headquartered in Ogden, Utah, is one of eight regional experiment stations charged with providing scientific knowledge to help resource managers meet human needs and protect forest and range ecosystems.

The Intermountain Station includes the States of Montana, Idaho, Utah, Nevada, and western Wyoming. About 231 million acres, or 85 percent, of the land area in the Station territory are classified as forest and rangeland. These lands include grasslands, deserts, shrublands, alpine areas, and well-stocked forests. They supply fiber for forest industries; minerals for energy and industrial development; and water for domestic and industrial consumption. They also provide recreation opportunities for millions of visitors each year.

Field programs and research work units of the Station are maintained in:

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Bozeman, Montana (in cooperation with Montana State University)

Logan, Utah (in cooperation with Utah State University)

Missoula, Montana (in cooperation with the University of Montana)

Moscow, Idaho (in cooperation with the University of Idaho)

Provo, Utah (in cooperation with Brigham Young University)

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